

SOUTHERN TEXTILE BULLETIN

VOL. 32

CHARLOTTE, N. C., THURSDAY, MAY 26, 1927

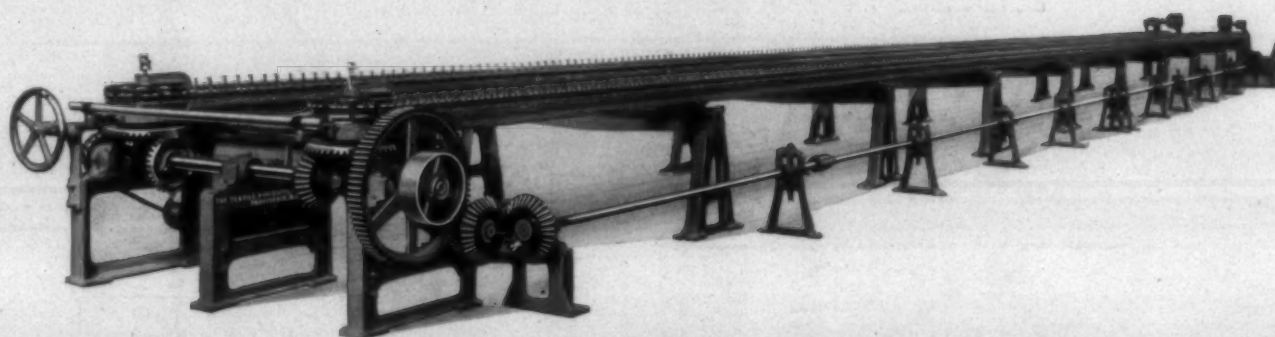
NUMBER 13

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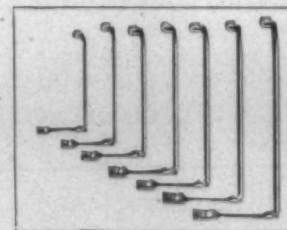
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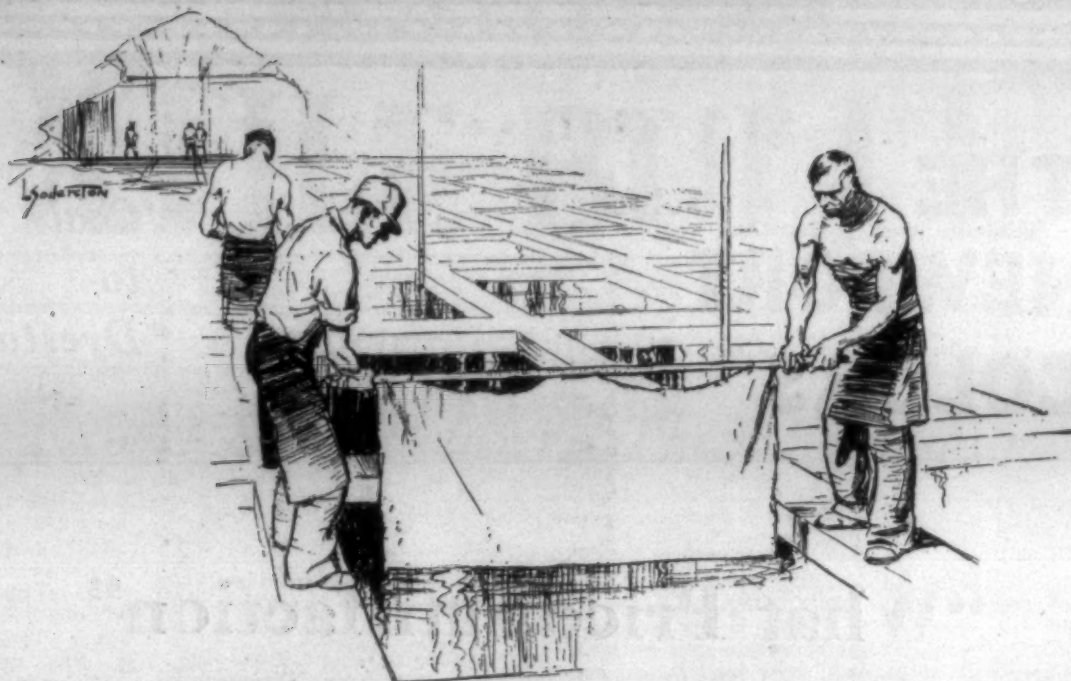
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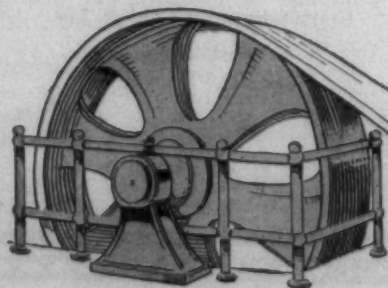
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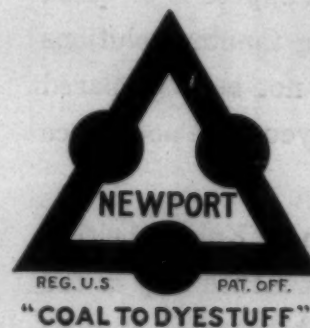
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SOUTHERN TEXTILE BULLETIN

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NUMBER 13

*Export Sales Policies—Their Formulation**

NO matter how large or small the business, a definite policy is needed in building export trade. Unless a policy is formulated one is merely "shooting at the moon." This does not mean slavish adherence to a fixed program. Elasticity of operation is not inconsistent with a clearly outlined general policy. The sooner it is appreciated that business, both domestic and export, is in a state of transition, that the normal condition is change, the more evident will this fact become. If it is realized that this is fundamental it helps to simplify matters. It is absurd to imagine that hard and fast rules can be formulated and that they need not be deviated from. This method is not followed in the home market; much less can it be done in building overseas business.

What does an export policy imply? Merely this: Determining the most effective and economical method of marketing a given product. All of us wish to sell as cheaply as possible; incidentally we desire to build on a firm foundation, one that permits of continuous growth. The method of bringing this about is known as the policy. It will be immediately apparent that the underlying factors are precisely the same whether in domestic or foreign trade. This cannot be too strongly emphasized.

As soon as the manufacturer has determined that his product can be exported he must determine two things:

a. Where to export.

b. Through what channels to sell.

Thus, the manufacturer has, at the outset, to make an all important decision. It is the rock on which many a firm has foundered. At this point it is necessary to emphasize the need for caution and to suggest the first essential in determining upon the policy. It is this: The building of an export business must be placed under the direction of one individual. You cannot deal successfully in foreign markets if you proceed as though you were conducting a town meeting. Authority must be delegated and responsibility fixed. This having been done, the individual in charge must be held to strict accountability. What is everybody's business is nobody's

By Ernst B. Filsinger, Export Manager, Lawrence & Co., New York.

business. No nothing does this apply more directly than to overseas selling.

Still another word of caution may be suggested. Once having determined to build foreign trade don't let your feverish desire to obtain results get the best of your judgment. Avoid false motions which only mean losses. Proceed as does the architect or engineer or builder; plan well and you will be well repaid. A few months devoted to research before getting underway will not only save time and money—it will enable you to build intelligently. There is no royal road to success in export trade. Happy-go-lucky, slapdash, hit-or-miss methods are certain to result in ruin.

Selling in a Real World.

Nowadays it is comparatively easy to get all the facts needed before reaching a decision. The literature on exporting is remarkably rich. Concrete facts and statistical data bearing on your business, not only in a general way but in specific markets, may be had for the asking. One of the best sources for such information is the Bureau of Foreign and Domestic Commerce, represented in almost every important city of the United States. Its files are bursting with data. It is no longer necessary to engage in long months of correspondence with U. S. Trade Commissioners or Commercial Attaches. Give the bureau an opportunity to help you. Often your competitors will be glad to tell you of their efforts in certain markets. If you hesitate to ask competitors, your friends in non-competitive lines will give you the benefit of their experience. Then, too, you can obtain considerable information from the Chamber of Commerce of the United States, Foreign Commerce Department; from the Philadelphia Commercial Museum, and other like institutions. If you wish to sell in Latin America, the Pan-American Union can supply considerable data. Export journals and trade papers can frequently make valuable suggestions. So, too, can the trade advisers of the National Foreign Trade Council, who are at your beck and call the year through. If you care to make a more detailed study you can consult the publica-

tions of the Department of Overseas Trade of the British Government. In any case you can be perfectly sure that an immense amount of information on your specific problem is already in existence.

I have mentioned the fact that conditions everywhere are in a state to flux. Your selling policy in no two countries can be absolutely identical. Markets differ greatly. They are influenced by the topography of the countries, by climate, etc. The habits and customs of the peoples of the world differ materially. You may find that a plan which is perfectly feasible in one country may prove unsound, at least in certain particulars, in another. Every successful exporter will admit that it is exceedingly dangerous to generalize in export sales advice. The man who approaches an overseas selling problem dogmatically is lost. For that reason I cannot too strongly emphasize the need for flexibility. Don't be afraid of a policy of trial and error. With ordinary precaution such a policy need not prove costly. All of us are compelled to follow these lines in domestic trade. Why not in export selling?

Methods of Doing Export Business.

There are many ways of doing an export business. Some are sound for certain lines, some for others. Often all channels of distribution can be used. It needs analysis and study to determine which is the best. In succeeding paragraphs these will be dealt with in some detail. However, speaking in general terms, the ordinary export channels which are open to most firms are the following:

- Export commission houses.
- Direct sales by mail.
- Traveling salesmen.
- Combination export sales managers.
- Local agents.
- Customer distributors or agent distributors.
- A combination of several or all of these methods.

Before you can decide which channel is the most advantageous for the distribution of your product, you must determine upon whom you are going to sell. Again speaking in general terms, the following may

be listed as the most important outlets:

- Wholesalers.
- Retailers.
- Manufacturers.
- Agent distributors.
- Customer distributors.

Attempts are often made to surround export selling with an air of mystery. Nothing has less justification. What is needed most of all in formulating an export sales policy is common sense. Be guided by your domestic experience. If you are accustomed to deal with wholesalers at home you are more than likely to be successful if you use the same channel abroad. On the other hand, if retailers are your natural outlet in the domestic market, they are likely to be so in the foreign field. Of course you may find it necessary, at the beginning, to make certain exclusive agency or customer-distributor arrangements; in any case the study that you make will help you to approach this problem intelligently. Be guided also, as I have urged, by the experience of your friends. They will be glad to do what they can to save you some hard knocks.

In exporting, as in so many other activities, it is best to follow the line of least resistance. For that reason it is advantageous to "try out" a selling proposition in a nearby market. Mexico, Cuba, the Dominican Republic and the British West Indies may be recommended for this purpose. Conditions in each are dissimilar. They have the great advantage of proximity. Considerable time may be saved in correspondence. If it seems advisable a sales effort can be made simultaneously in all these places although that is not always advisable. This much is true—your experience in the first market will be invaluable in the second, third, or tenth. Above all, these countries, because of their proximity, lend themselves admirably to a personal visit. Trips of four to eight weeks can easily be made. More can be learned on the ground by personal contact with buyers than from reams of correspondence. As a matter of fact it almost invariably proves a saving of money to make this personal investigation because a business man thoroughly familiar with his own line can make such changes in the presentation of his proposition as the situation requires.

Many firms, whose goods lend

*Address before National Foreign Trade Convention, Detroit, Mich.

themselves to sale abroad, are afraid to enter the export field because of a lack of knowledge, a fear of granting credit, inability to extend terms, etc. Even such houses need not be deprived of an overseas outlet. They have at their command a number of export commission houses who render admirable service to the novice in exporting. Here again a word of caution is imperative. Be careful how you select your export commission house. Be even more careful in the kind of sales arrangement that you make. The great majority of export commission houses are located in New York. If you are really in earnest about building up foreign trade it will pay you to make a personal visit to discuss details with these firms. You can precede your visit by preliminary correspondence in order that you need lose no time once you reach New York. A list of export commission houses may easily be obtained from the publication "Buyers for Export." In connection with the name of each firm is a list of the markets in which it principally works, etc. Ratings may be obtained from the Commercial Agencies. There are so many factors that enter into a satisfactory selling arrangement that personal contact is highly desirable.

Once you are in touch with one or more export firms, don't close with the first one you call on. You can well afford to adopt the "show me" attitude. Among export houses just as in other lines of business there are reliable, upstanding concerns, and others who fall into the undesirable class. Some export houses claim to be able to sell everything from pins to locomotives. They assert that they are well represented everywhere, whereas in reality such is rarely the case. Many American manufacturers who work through export commission houses have found it desirable to select two, four, or even more concerns, each one chosen for its ability to render the best service in the particular field with which it is most familiar or where it can function in the most efficient manner. Much time and money can be saved by making the export house prove its claim as a distributor. Insist on seeing what it has accomplished for other firms handling products similar to your own. By taking time to select your export houses you will find that you cannot only avoid disappointment, but build solidly for the future.

There is one thing which is highly important before closing with any distributor whether it be export house, local agent, customer distributor, or what-not: It is to have a clearly defined sales arrangement. This must take account of the commission which is to be paid for the sale of the goods, the commission to be charged to the buyer (if any), the commissions on direct or indirect orders, terms of payment, etc., etc. It is undesirable to leave any detail of this nature to chance. Furthermore the commissions which the export house will pay to its own representatives should be clearly understood; so, too, should the terms which it expects to grant, the sales efforts which it will make, etc. It is likewise important to have a

clear understanding regarding the advertising to be done, the sales helps to be supplied, the responsibility for expenses in connection with sending samples, the duty to be paid thereon, and so on. Many a promising business has been ruined by failure to provide for just these details.

But the manufacturer has still other means of building up an export trade. This is especially true when he does not wish to set up his own export department. He can engage the services of a combination export manager, a comparatively new cog in the export machinery of the United States. The advantages the combination export manager offers are a thorough familiarity with many markets, the economies from acting collectively for a group of manufacturers instead of only one, location at seaboard (usually New York), where he can deal with banks, shipping lines, call on export houses, make arrangements with them for representation in certain markets, deal with visiting buyers, and so on. In selecting the combination export manager (a list of whom appears in "Buyers for Export"), the same precaution should be taken as in the case of the export commission house. The combination export manager's ability to act for the manufacturer should be proved. A properly qualified combination manager will be in a position to demonstrate the advantages he can offer.

Dealing Directly With Buyers.

Contrary to the belief often held by small manufacturers who have not hitherto engaged in export business, it is possible to deal directly with buyers in foreign countries. In determining upon a selling policy it is well to weigh the advantages of direct relations with such firms. However, there is one mistake which is made far too often and which is easily avoidable. It is to circularize indiscriminately lists of buyers which may be obtained from various sources. Nothing is calculated to injure the sales prospects more than an error of this sort. Nowadays dependable lists of buyers may be obtained from the Bureau of Foreign and Domestic Commerce. These should be carefully gone over and letters should be addressed only to such firms which, in the light of information available on the lists, offer really promising outlets. Far too often circularizing is done on the basis of names found in directories and no account is taken of the size firm, its importance, whether wholesale or retail, etc. If proper attention is paid to this detail misdirected effort can be avoided and considerable money saved. It cannot be gainsaid that, preliminary to the visit of a traveling salesman (if the conditions warrant the sending of such an individual to a market) much valuable spade work can be done and the ground prepared by direct correspondence, circulars, etc. This feature cannot be stressed too strongly because the type or kind of customer that it is sought to sell is an important item in the shaping of a policy.

If selling direct, and not through an export commission house, is decided upon, thought should be given

to the type of salesmen who will prove most effective. At times arrangements can be made for a number of houses in similar lines of business, but non-competitive, to utilize the services of the same man. At the outset this may materially reduce the cost of selling. On the other hand, if the prospects for a line are sufficiently promising, there is no doubt that the exclusive services of the salesman will give best results. He will be able to devote all his attention to the interests of one firm. A policy of concentration, just as in the home market, has proved absolutely sound in developing export business. For that reason, in determining upon a policy thought should be given to this detail.

There are many lines of business in which the agent-distributor or customer-distributor offers the most promising outlet for merchandise. The agent-distributor may be an importer to whom an exclusive agency for a district or country is granted. This agent or customer may act merely on a commission basis or he may buy goods outright. The term "customer-distributor" is self-explanatory. It means the sale outright to one firm, under an exclusive agency arrangement, who will, in turn, distribute the merchandise to wholesalers or retailers as the case may be. In formulating an export policy careful study should be given not only to local conditions but to the respective advantages of these two methods of distribution. Here again the advice of non-competing and experienced firms may be asked. The policy followed in the domestic market may also serve as a guide, at least in the early stages of developing the business. It is important to give this detail much thought for the reason that it is not easy to change an arrangement once it has been made. This is due to the fact that hardly any foreign concern is willing to undertake to do the hard work necessary for the introduction of a line, without a clearly defined contract and for a definite period. Here again many errors, easily avoidable, have been made.

In planning direct selling the most common procedure is to appoint a local agent. This agent likewise is granted exclusive right to solicit business in a certain territory or district. Too much cannot be taken in the naming of the agent. The agent's standing and reputation should be investigated as carefully as the credit responsibility of a foreign house. The reasons for such investigations are obvious. The agent serves as the representative of the manufacturer. In case of difficulty he must be prepared to act intelligently and effectively. Unless the manufacturer has sufficient confidence in the agent to turn over merchandise to be re-sold and accounted for, the agent is lacking in one of the most important qualifications which should commend him to the American exporter. In making agency arrangements care should be taken to define definitely the rate of commission, the exact authority of the agent to act for the manufacturer, the conditions under which the contract is to be revoked, etc. It should also be

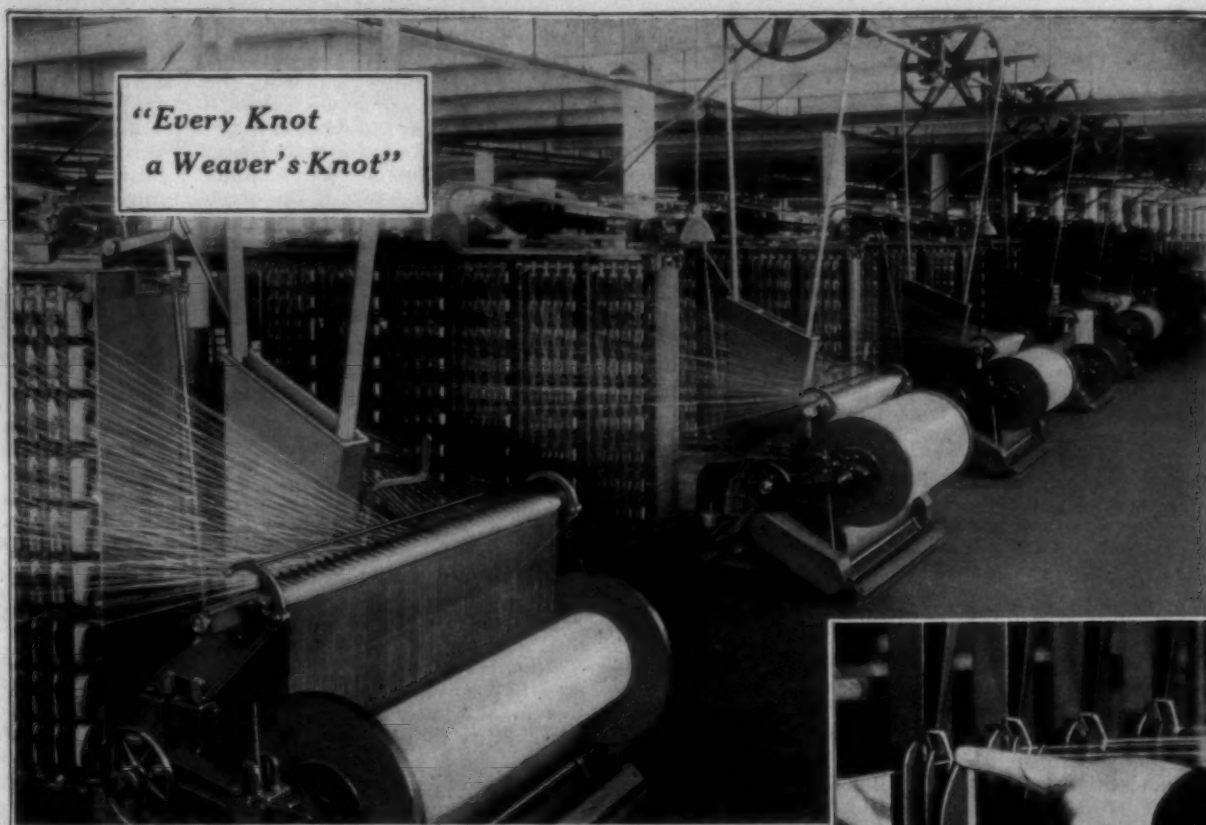
clearly stipulated whether the agent is to receive commissions on orders sent direct to the manufacturer by customers, or received through New York commission houses. Serious differences with reliable agents have often arisen because of the failure of the manufacturer to take such details into consideration when formulating his policy. There is no longer excuse for misunderstanding on this score. Every firm, whether already doing an export business, or a novice in overseas selling, should read the publication recently issued by the Department of Commerce, entitled "Exclusive Sales Arrangements in Foreign Trade"—Sales Promotion Series No. 45. A study of this pamphlet and an application of the suggestions contained therein will serve to obviate many difficulties that frequently arise.

Commissions and Terms Should Be Thought Out in Advance.

There is another important detail which enters into the formulation of an export selling policy. It is that regarding prices, discounts, confidential commissions, etc. The manufacturer should realize that once the line is introduced he is likely to receive orders direct from foreign buyers as well as through export commission houses. If he employs local agents and also accepts business from the commission house, he should determine in advance whether his prices will permit him to pay the confidential discount often demanded by the export firms. If he proposes to sell both to wholesalers and retailers he should definitely settle, at the outset, the matter of discounts either on quantity or volume in dollars basis. If he fails to think this detail through, he may suddenly find himself confronted with a demand for commission both from the local agent who hears of the sale through the export commission house, or involved in disputes about discounts demanded by retailers, to which only wholesalers are entitled. A sound and profitable export business cannot be built up unless such details are given consideration before any quotation is made, whether to local agents, foreign importers, or export commission houses. Possible changes in the method of selling should also be given thought in order that the selling effort may be fitted into the new picture as circumstances change and business develops.

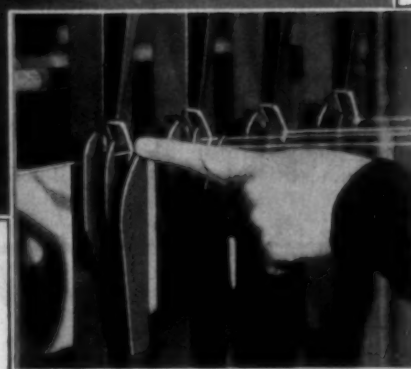
Another factor of vital importance is the matter of terms. Export commission houses are ordinarily supposed to pay cash. Frequently they request terms of thirty, sixty, or sometimes ninety days. It rests with the manufacturer to decide, after obtaining reports from commercial agencies and other sources, to what credit limit the export commission house is entitled and how long he is willing to wait for payment. In the event that sales are made direct to wholesalers or retailers in foreign countries, or in the case of business done with an agent or customer-distributor, the matter of terms also bears an important relation to the policy. On this point much valuable information may be obtained from the Commercial Intelligence Division of the

(Continued on Page 30)



500 YARDS A MINUTE

Should a single thread break, down goes a Drop Wire and the Warper comes to a full stop in 2½ seconds—without further breakage. This is part of an interesting story.



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Sloan Tells of Cotton Uses

SPEAKING before the annual convention of the American Wholesale Grocers' Association in Louisville, Ky., last week, George A. Sloan, secretary of the Cotton-Textile Institute, outlined the work that the Institute proposes to do for the textile industry. Mr. Sloan also touched upon the spirit of interdependence that is prevalent in industry today. In closing his remarks, he spoke of the efforts of the Textile Institute to find new uses for cotton, with particular reference to the uses of cotton bags as containers for many various products.

Mr. Sloan, in part, said:

I am not expressing a new thought when I state that the last decade has been a lesson in interdependence. The war, of course, was the greatest laboratory study in this direction. Old ideas of isolation fell before the hard fact that no nation, large or small, could be untouched by or uninterested in events of any other nation.

In business, and in industry, the lesson has been almost equally as striking. With the early days of associational activity, co-operation meant a mutual interchange of confidence between members of one industry or one branch of one industry. It had little or no bearing on the relation of the group to any other group. The next step was the gradual realization of the fact that component parts of an industry had

a mutuality of interest which could not be ignored. Out of this grew a new and active relationship between manufacturers and distributors of a given product.

More revolutionary in its character has been the development of a sense of interdependence between one industry or business and practically all other industries and businesses. The hardware dealer has learned that the boll weevil means something to him personally; the cement manufacturer is represented as scientific meetings where specifications on osnaburg bagging are discussed; the cotton textile manufacturer is interested in fluctuations in the price of wood pulp.

And so today you as wholesale grocers are holding a cotton session and I as a representative of the Cotton-Textile Institute am present at your invitation. A decade or two ago that would have seemed queer; today it is accepted as quite natural for we have arrived at a period in business of inter-industrial co-operation. There is nothing social or philanthropic in this. Neither is it a forerunner of the millenium. It is simply good business practice. Your interests and our interests touch at so many different points and in so many varied ways that we must work together if we are to prosper to the fullest extent.

One of the important activities of the Cotton-Textile Institute is

the development of new uses for cotton goods and the extension of existing uses. The work is being undertaken primarily, of course, in the interest of the cotton manufacturers. But in every step in its development we are encountering and shall encounter points of contact with other industries and businesses. Between the wholesale grocers' business and the cotton manufacturing industry, for example, there are at least two of these contacts. Your progress is very widely affected by the condition of the cotton farmer; our progress is affected by the amount of cotton cloth you use as a basis for containers.

It is not the purpose of the Institute to substitute cotton for other materials on a propaganda basis. Appeals to patriotism or to sectionalism or to sympathy can result in no permanent expansion of cotton uses unless the appeals are based on sound economic premises. I think that Governor Walker of Georgia has best explained this thought in a letter recently sent to a department store in Nashville, Tenn. The Governor stated: "It is with a great deal of pleasure that I learn of the 'Cotton Week' which you will conduct in Nashville. In featuring cotton in this way and showing its adaptability to all users you will be performing a real service to your citizens, to the cotton farmers in the South, as well as to the country at

large. Cotton is a basic American industry and as such deserves the hearty support of the American people. We are a nation of intense and enthusiastic patriots and when sound economical buying is coupled with an appeal to our patriotism we may all feel sure that cotton shall be King again!"

Have you ever stopped to analyze this commodity, cotton, on which a basic industry has been built up during the centuries? If you have not, let me sketch briefly some of its outstanding qualities which make it vital to our civilized comfort today.

Cotton is a good retainer of heat. Conversely by the porous construction of many cotton fabrics it is one of the coolest materials. Hence its enormous use in tropical countries.

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It possesses an excellent affinity for dyes and remarkable ability to retain them, and I could go on indefinitely.

Your secretary in his kind letter of invitation asked me to report to this meeting on the results of our

(Continued on Page 29)



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POLAND: Tomaszow

Master Mechanics Hold Interesting Meeting

THE Master Mechanics' Division of the Southern Textile Association, in joint session with the Greenville Branch of the American Society of Mechanical Engineers, held a very interesting meeting at the Poinsett Hotel, Greenville, S. C., on May 18.

This was the first meeting of the Master Mechanics' Division since its organization in Charlotte last winter. The attendance and interest shown at the meeting show that the new division has gotten away to a fine start and gives ample assurance that the Master Mechanics' Division will carry out its work on the same high plane as that of the other divisions of the association.

H. H. Iller, of Newberry, chairman of the division, presided at the meeting and he is due much credit for the work he has done in organizing the Master Mechanics. He has had able assistance from G. T. King, superintendent of power of the Lancaster Cotton Mills, who is vice-chairman.

CHAIRMAN ILLER: Gentlemen, the first paper on our program today is "Some Cotton Mill Machine Shop Methods," by G. T. King, superintendent of power of the Lancaster Cotton Mills, at Lancaster, S. C., and vice-chairman of the Master Mechanics' Division of the Southern Textile Association. Mr. King. (Applause.)

MR. KING: Gentlemen, when our chairman asked me to take part in this program today by preparing a paper or something on the machine shop methods in practice, I replied to him by saying that there was just one fact alone sufficient to disqualify me from undertaking such a proposition, and that was that with one exception I had not been in a machine shop in more than four years, outside of our own.

However, I feel a certain responsibility in connection with this branch of the organization, and I, too, would like to stress that it is really a branch of the Southern Textile Association, and not a separate organization at all.

The machine shop, or the master mechanic's part, is somewhat different from any other department in a cotton mill. In all the other departments, starting with the opening room, it is the duty and responsible duty, of the one in charge to supply the next man in the process with material for the general process in the mill. But, in the machine shop it is quite different. The machine shop really is a service department. Now, when I say "service" I mean that it serves the whole plant, and some of us are familiar with what goes with service in that connection; that is a band boy or an oiler comes down and he commands us to do what he wants done, so we get the idea of a service shop from that kind of thing.

The first, or rather the foundation of an efficient machine shop, is an organization; an organization that will function down to the very last man left on the job.

We may say that we are so training our men that if for any reason one man is off, or out sick, or some-

thing that has kept him away, that there will be another man in the organization that will, practically speaking, automatically take his place.

To have such an organization as this, there must necessarily be whole-hearted co-operation on the part of every man making up the organization, and we feel sure of our ground when we say that such an organization is possible with the proper leadership.

In our repair department, or machine shop, as it is usually called, we take on quite a few young men, and our measure, or rather the standard by which we measure what kind of master mechanics these young men are going to make, is the regard they have for their moral character.

As a rule, if a young man starts out for himself as a machinist, or



H. H. Iller, Chairman
Master Mechanics Division
Southern Textile Association

in any other line of work, and has the proper regard for his own moral character, the chances are he will be willing to assume such responsibility as will in time qualify him for higher duties.

We find that to get the best results from every man in our organization, there must be complete understanding as to what is going to be done. If there is going to be any new thing put over out of the ordinary way, we try to explain in full detail to every man who is going to have any part in putting it over. If we fail to do this we have found that we get all crossed up and there is a lot of slack in getting started, and we really feel we can't go far enough in giving out the details of anything we may undertake along that line. We are making an extra effort to have complete records of every machine and equipment that is in any way under the control of the repair department. We have found that these records are of great value to the successful operation of our department. These records are extended to cover many details, such as standardizing our various parts of machinery, and so forth.

Every member in our department is supplied with a daily work card. At the close of the day he makes out on this card a report of just the number of jobs he did, and the number of hours put in on each job,

and for which department it was done.

These reports are all transferred to a ledger which carries an account with every department in the plant. By this method of records we are enabled to know just what we have done in the past for any department, or for any certain repairs that have been made in the power department.

In laying out work, we try to, as a rule, put every man on work that he is best suited. However, we give every man a chance to do anything that he is willing to undertake. If a man shows that he really wants to go up to something more responsible, we encourage him all we can. In our shop we do a great deal of finishing of parts for the machinery. We have found by experience that there are a great many repair parts we can buy either from the local foundry or from the machinery people unfinished, and finish them in our own shops, for considerably less than we can get the finished parts.

However, we only do the things that we can do just as well as the other fellow. In some repair shops it is somewhat practiced, for the one who is going to make the replacement part to have the old one to use as a pattern. If this should happen in an old mill where it has run for many years, the parts possibly have been replaced several times, and it is likely that by this time the correct measurements have been lost. We are trying to get away from using calipers in all the work that it is possible to do so. We are trying to prepare jigs and rigs and templates that will eliminate the chance of error in making these parts, and we have found that it well pays for all the time that it takes to make up these jigs and rigs and templates.

We are also trying to, as far as possible, quit using any uncertain methods of measurement. We not only lose a good deal of time in that haphazard way, but we make so much stuff that is not satisfactory to the people we are serving, that is the other departments in the mill.

We are trying to equip our shop with standard reamers of all sizes up to three inches; also specials that go into the making up of any special parts for machinery in our plant.

We have found by tests covering long periods, that cold rolled steel used in a journal, such as gear studs and small shafts, and so forth, will last from three to six times as long by case-hardening them, so we are making an effort to case harden all small parts for machinery that is made of cold rolled steel.

We have extended this into our picker room. Take the big calender roll, that is sometimes refinished with cold rolled steel; we case harden those and we have never had one come back.

There is another thing that we have found that might be of interest. The greatest loss of time in our shop is caused by our men starting to do some small job of some kind, the nature of which ne-

cessitates the using of several small tools, such as the cotter key and other small tools. By the time he goes to all the men in the shop about three times around and to the tool room several times, there is considerable time lost, in fact enough time lost to pay for several sets of all the tools he has been hunting. A machine shop well equipped with large tools and not well equipped with small tools is like a young man dressed up and nowhere to go. I thank you. (Applause.)

THE CHAIRMAN: Gentlemen, I believe you will agree with me that that paper by Mr. King is a very practical one, and listening to Mr. King's paper I find that he is thinking quite along the same lines that I am, and possibly a number of you are. There are probably points in Mr. King's article there that are highly interesting to some of you, and I am sure that Mr. King would be glad to answer any questions you might wish to ask, and I hope you will ask questions.

That is one of the difficulties we usually have in these meetings; there is a disinclination on the part of the men to ask questions when really there is something they want to know; they are backward about getting up and asking about it.

There is just one question I would like to ask myself of Mr. King. That is his method of case-hardening cold rolled steel studs.

MR. KING: How's that?

THE CHAIRMAN: Just what method do you use in case-hardening.

MR. KING: Well, we have tried several different methods and the quickest and cheapest and surest method we have tried up to this time is common yellow potash pulverized and sprinkled on hot.

THE CHAIRMAN: We use that same method.

MR. KING: We quench in water also.

MR. CHAIRMAN: So do we.

A MEMBER: How does it compare with cyanide potash?

MR. KING: You can make a nicer looking job with cyanide but I have never been able to go so deep to form as good a shell, you might call it, with cyanide. It makes a nice looking job but it is so thin that any little pressure will break through that thin scale. That has been our experience. Somebody else may have had a different experience.

MR. YOUNG: I would like to ask a question. The last part of your paper there was very interesting in regard to the small tools you spoke of. How do you eliminate that?

MR. KING: I want to say one other thing right here. I didn't say much about an efficient shop, but I want to say the most efficient shop I know anything about is in the Carolinas, and it is run by just one man. I believe that mill is in the best all around repair today of any mill, from the standpoint of shop efficiency.

Back to your question, in our plant we used to keep those small tools in the supply room and the
(Continued on Page 14)



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Duncan is Cost Accountant for Textile Institute

Walker D. Hines, president of the Cotton-Textile Institute, announced the appointment of George W. Duncan, of Lynchburg, Va., as cost accountant. Mr. Duncan will assume his duties on May 25.

A comprehensive study of the costs of production in the cotton textile industry is one of the chief objectives of the Institute. The cost accountant will work largely through and in connection with the groups which have been formed and are being formed within the Institute. It is the purpose of the organization to classify its members in groups according to the nature of their finished products. Already the wide sheetings and the narrow sheetings groups have been formed and others are in the process of formation.

Mr. Duncan takes up his new work with the Cotton-Textile Institute after more than 20 years' experience in cotton manufacturing. He was born in Macon, Ga., September 7, 1886, and received his preparatory education in the public schools of Macon, Ga. He was graduated from the Georgia School of Technology, Atlanta, Ga., with the degree of B.S. in Textile Engineering in 1910. During vacations and for the following two years after graduation he worked in various mills of Georgia and the Piedmont section of South Carolina, supplementing his technical training with practical experience in cotton manufacturing.

From 1912 to 1917, Mr. Duncan was employed in the Greenville, S. C., office of Victor-Monaghan Company, first in the accounting department and subsequently working up to first assistant to the vice-president in charge of operations. During this time he developed a detail fabric cost system covering a wide range of styles varying from sheeting, print cloths and colored striped shirtings to combed lawns and voiles.

In the spring of 1917, Mr. Duncan resigned as head of the cost department of this firm and entered the first officers' training camp, Fort Oglethorpe, Ga., where he was commissioned a captain, field artillery, and served overseas as a battery commander with the 136th F. A. Brigade, 81st Division.

Returning to this country in July, 1919, Mr. Duncan joined the staff of Converse & Co., and for the following year was actively engaged in a study of the manufacturing processes, and products of mills whose output was marketed through this selling house.

He was transferred to the Consolidated Textile Corporation, under Allen F. Johnson, and for the last seven years has been with that organization actively engaged in their manufacturing and cost accounting work. Mr. Duncan is married and has one son.

1926 Cotton Crop 17,911,000 Bales.

Washington, May 17.—Final figures on the 1926 cotton crop, issued

Department of Agriculture, place total production at 17,911,000 bales.

According to the board, the area in cultivation on June 25, 1926, was 48,730,000 acres; the area picked, 47,087,000 acres, and the yield of lint cotton picked per acre, 181.9 pounds.

Texas To Reduce 10 to 15%

The Dallas News has the following to say relative to the cotton acreage in Texas:

"Texas farmers have planted from 10 to 15 per cent less cotton this year than they did in 1926 and will raise at least that percentage more of feedstuffs than last year. The floods in the Mississippi Valley caused little increase in cotton planting in the State, although here and there farmers who believed the floods would affect prices added somewhat to the size of their fields.

"The Dallas News asked its correspondents for data along these lines and received answers from more than 100 well-informed men in all parts of the State. These answers are herewith printed.

"In some portions of the State acreage decreases is seen everywhere. Summarized by sections, the figures are as follows:

Eastern Texas: Panola county, slight increase in cotton acreage; Gregg and Tyler counties, about the same; all other counties 5 to 20 per cent less; large increase in feed crops.

"Northeast Texas: Camp and Cass today by the Crop Reporting Board, counties, same as last year; others

10 to 20 per cent decrease and corresponding increase in feed crops.

"North Central Texas: Ellis county, a little more than last year; Palo Pinto, the same amount; others 10 to 20 per cent decrease; much more feed.

"North Texas: Ten to 20 per cent decrease in cotton in most of the counties reporting except Benton, which will plant about the same as in 1926; good increase in feed crops.

"Northwest Texas: Baylor county reports a 33 1-3 per cent cut and the rest of the district 10 to 25 per cent, except Wichita, where there is a belief that flood conditions will raise prices and the acreage will be increased. Less feed will be raised than last year.

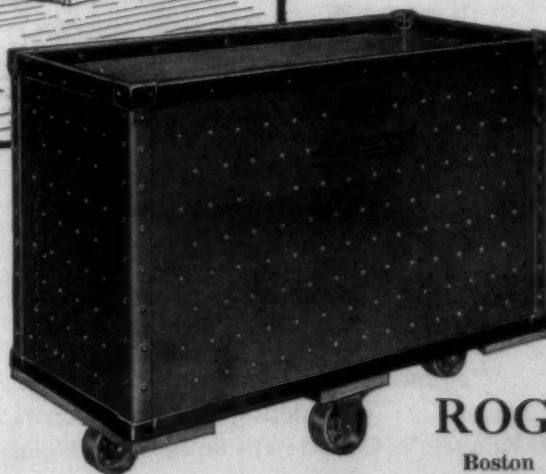
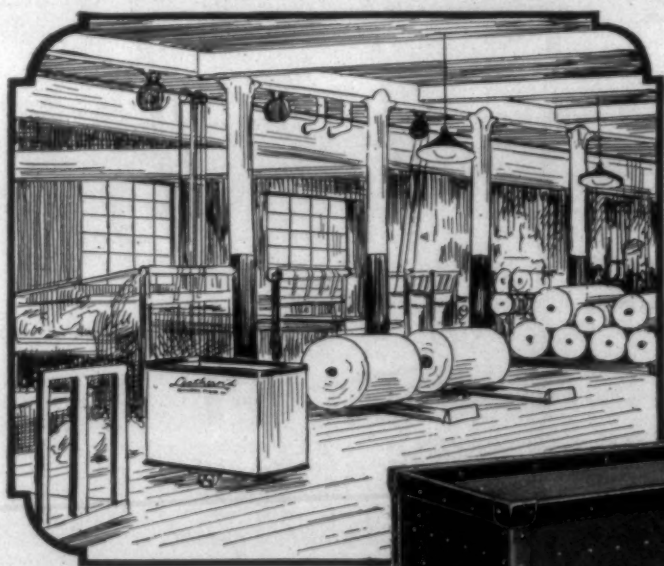
"Central West Texas: Comanche county will have 35 to 40 per cent less cotton and Brown county 30 per cent less; others from 5 to 15 per cent less in most cases, feed crops larger.

"South Central Texas: Five to 15 per cent decrease in cotton, increase of about the same percentage in feed.

"Panhandle: The wheat crop is far from encouraging in some sections and more cotton than last year probably will result. Hall and Potter counties both will have more.

"South Texas: Webb county will have 60 per cent less cotton and Zapata and Jim Hogg counties report a considerable decrease in acreage. Much more feed will be raised.

"Gulf counties: About 5 per cent decrease.



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Master Mechanics Hold Interesting Meeting

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men went to the supply room and to the supply clerk and he issued whatever they asked for, but we found that that in the smaller tools they can't keep up with them. They were broken and scattered and went to the four winds, and they seemed to have no personal responsibility of them.

THE CHAIRMAN: That's my experience exactly.

MR. KING: I took it up with our manager and explained to him what I had found, or rather our experience for some time, and he said, "Now, what would you suggest?" I said, "Well, I will suggest this: That the shop, or rather the tool room cut out the supplying of any tools below a half inch size. We will buy the smaller sized tools and keep them in the supply room on sale at half price," and that's what we are doing and I am sure that the men are perfectly satisfied with that arrangement. There are no strings to it; they can go to the supply room and buy any small tool at half price and they never have to give them back.

THE CHAIRMAN: You mean drills and taps?

MR. KING: Drills and taps and ease-outs, or anything of that kind. Of course other material I mentioned, the small keys and things of that kind, that is our responsibility to keep them supplied with that. So, they are not hunting for them and we feel that we have gained a great deal in our efficiency with the new method.

A MEMBER: Do your men object to buying the tools?

MR. KING: None whatever. We can't keep them in the supply room.

MR. KNIGHT: We do the same thing but we don't charge for them. We give every machinist a set of tools. The trouble I had was everything would be broke; so, giving them tools, all the little things that are always lost when you want them, I get them together and say, "This is yours. If you break it come back and I will give you another," but I don't charge anything for them.

Record System.

THE CHAIRMAN: One question I would like to ask. In connection with the records, your cost records, your charge slips for your work, do you keep those or do you turn them to the office?

MR. KING: We don't keep the records of our work in the true sense. All the gears and all the new parts that we make goes through the supply room and are charged out from the supply room. Now, the thing I mentioned in regard to records is more just for our own benefit, for the shop's benefit.

For instance, one department says, "Here, I am not getting any work done in the shop," he may go to the shop and say, "I am not getting any work done at the shop; they won't work for me." We can refer to that ledger at any time and see what we have done for that de-

partment. We use it for that more than any other use. Then it keeps a check on the men. They have this daily report to make and on that show what they did and for which department, and so on.

MR. KNIGHT: Our system is, every day the men fill out a card on what job they worked, and every department has a number. Then the time clerk the next morning collects all the cards, and divides it out on a sheet to each department, spinning, weaving, carding, and so forth, so there is the labor every day and at the end of the week it is entered up and we give this to the auditing department. We have a department they call it an auditing department; it should go to this office where the paymaster is; I don't know why it should go there but it does, and that shows what every department has had in labor and the supply house that supplies material. If a man went there he would tell the man in the supply room what it was for and he would charge that against it and then each month all the material and all the prices are charged so every department knows what it costs for repairs and for materials, and as you say, if they come back and say they haven't had anything done, we show them.

MR. FOX: I would like to know what has been done these last few years—I am a has-been—towards the standardization of threads and dimensions in machinery. We used to have trouble with thirteen threads, etc., on the same sized bolt, and an inch was an inch and a tenth. What has been the modern tendency of the standardization of such parts? I am out of the running now, but I would like to know.

A MEMBER: I believe about the only size that I could ever come across now is half an inch. We still have the half inch, and twelve thread and thirteen, but most of the textile machines I come in contact with I find the half inch, twelve thread. However, in our particular mill I've put away all the twelve threads, I had to throw them in the bottom of the reservoir, so we won't ever get them any more, and we are making everything thirteen. We are making all our studs in order to keep some man from putting a twelve-inch nut on a thirteen, and we have practically eliminated that nuisance of twelve thread half inch at our place, but in order to do it I had to take the dies and taps and throw them clean away in the bottom of the reservoir.

MR. FOX: How many men use a stock department in checking in and checking out supply parts?

THE CHAIRMAN: Those of you who use your stock or supply room department for checking in and checking out parts, please hold up your hands? (11.)

MR. FOX: Wouldn't that be a good subject for discussion at the future meetings?

THE CHAIRMAN: I think so. I was going to take a few minutes of the division's time to outline, in a general way, what we have been trying to do in our own mill along that line.

We found our supply department was related so closely to what we were trying to do in the machine

shop that we have devised a system of records which ties up the two in a way. Our supply room department was arranged with the idea of showing both of the departments, and to the general office, once a month the amount or the number of different articles used by each section man in the department, and the total cost.

Repair Costs.

That led us into the question of every section man's repair cost, so we have devised a system for our machine shop that is like this. The overseer sends down an order for every repair job. The man in the shop who does that work has to fill out that blank or make out a ticket covering the job and turn into the master mechanic's office, on which it shows the amount of material used on that job, what it was and how long it took to do it. In that way it provides a way to arrive at the cost.

These tickets are entered into a ledger in which the section men's names and numbers are kept. Every man is charged up with all the jobs he has done in the shop. At the end of the month a report is made to the supply clerk covering that. He attaches that to the supply report which he makes for the different departments and for the general office. In that way, every section in the mill is checked up on for the amount of supplies it uses and for the repair it has had done.

There is one weakness that has been recognized in that system, and that is the spirit of competition which is engendered between section men for low costs, and creates a tendency on the part of those men to let jobs go that ought to be looked after. That is up to the overseer of the department and his assistants. We have put that squarely up to them. This system has only been in use now for a few months, but so far it has worked very satisfactorily. We have found the cost of maintaining the different sections in the mill has been very materially reduced, both in the number of parts used and the repair work.

The shop is now free from those little old jobs that the section men can do in two minutes without coming to the shop. It takes away from men the excuse to kill time by coming to the shop. If a man has a little job of filing to do, ordinarily if nobody is checking up on him, you all know he wants to run down to the shop—Bill Smith is down there and he is going to talk church matters and politics and so on with Bill Smith while he is down there. Now he does that little job of filing in the room and he is kept out of the shop.

We found further by following out that system we are now providing a grinder for the weaving department, which is available to all the section men in that department; we located that in easy reach of all the men, because we realize sometimes there are grinding jobs they have to do, but we don't want to give them the excuse to come to the shop. So, we are going to try this method and if it proves as satisfactory as we think, we are going to supply every department with a grinder.

Those are some of the things we are thinking about in our plant, and we believe they have made money.

Standardization.

Just one other thought in connection with standardization. We too finish quite a large part of the machinery replacement parts we use in our mill, and we have filed in our shop a sample, a manufacturing sample, of every part that we make, and that sample is used for checking, and we have developed a large number of jobs ourselves and we have found it very much worth while.

We keep records of the cost of all the things we try to do. If some new parts come up we haven't made heretofore, we buy those castings and then put them through the shop and keep records. If we find we can make those cheaper than we can buy them, we know we are going to make money finishing them. If, on the other hand, we find it costs more, we drop that.

Shop records I think are something very much worth while. There are records and records. Most of the records that you keep in the shop will teach you something, and I would commend to you the idea of keeping some sort of records in the shop, because you will finally be led into the right sort of record that will make money for your company.

MR. FOX: What difficulty do you have in getting castings of malleable consistency?

THE CHAIRMAN: My own experience, Mr. Fox, has been, that to get castings of the proper quality is a little difficult. I am sorry to say most Southern foundries don't make castings which machine as easily and seem to be of as close grain and texture as those that come from the North, but we have finally made a connection that is very satisfactory to us, and gives us satisfactory products that measure well up to New England foundries.

A MEMBER: I might say something in regard to the making of your own parts, and finishing your own parts. One of the biggest companies in this country keeps a record of all their sales and purchases of different parts they use and all their electrical work, in the auditors' department, and if they have a contract with a company that they are buying from, they will continue that contract until it is abrogated, and the auditor will come around to the plant superintendent and say, "Here, we have bought such and such from this company for such and such a length of time, and we have paid so much money for it. Make it yourself." They only buy them for that length of time, because they feel that the profit they have given that other company in buying those parts, should come to this company they are working for, and they go out and make them. And you fellows keep a record of how much you spend and then try to make it yourself and see if you can't duplicate it for a little less money.

THE CHAIRMAN: Gentlemen, that is a highly interesting subject and I would like to hear further, but our time is limited and we will be compelled to pay to another. One of the

members of the A. S. M. E. has consented to give us a paper on the Causes of Variation in Monthly Power Bills, and I am sure that this is going to be a very interesting paper. It is to be by a man most of you know, and he is recognized as an authority in his field, George Wrigley, electrical engineer of the J. E. Sirrine Company, of Greenville, S. C. Mr. Wrigley. (Applause.)

MR. WRIGLEY: Mr. Chairman, and gentlemen, you have conferred an honor on me I don't deserve. I am not a member of the American Society of Mechanical Engineers, but a member of the American Institute.

Variation in Power Bills.

We are talking about the Causes of Variation in Monthly Power Bills. Of course we are talking about electrical power plants. Somebody spoke awhile ago about disease and remedy. I think we haven't a disease and we are not going to offer a remedy. We are going to give it as it stands.

There has been a lot of bunk about our ignorance of electricity. It has been said, time and again, we don't know anything about it, and we don't, in one sense of the word, but what do we know about anything? I don't want to get you dizzy thinking along this line, but you think of gravity and the fact that gravity is one of the oldest absolutely fixed things. You know if I hold this book out here and turn it loose, it is going to fall to the chair. Can anybody here tell me what force there is that comes up and pulls it down? Just what makes it go? What force

is there between the earth and that book that makes it come down?

If you can tell us that, I will try to find somebody to tell you about electricity. We are not concerned with why it falls. We are concerned with the fact that it does, and so with electrical work. We are concerned with actions rather than the theory back of it.

And getting back to this power bill business, the first thought was the power bills. We are talking here about power bills for cotton cloth mills in the Southeast, and these facts will apply to manufacturing enterprises almost anywhere.

If these bills vary, about what is the amount they vary, and what the cause, or causes? We took a group of bills from ten typical manufacturing for twelve consecutive months and found these facts. The minimum bill averaged 20 per cent below the yearly average. The maximum bill averaged 43 per cent above the yearly average. The minimum bill was 69 per cent of the average of the maximum.

Now, those were bills just "as is," without any corrections for billing dates or anything else. If we selected the lowest month in the year, that is the month we had holidays or curtailments, the figures are, minimum bill 13 per cent below the yearly average; the maximum 11 per cent above and the minimum 77 per cent of the average maximum.

Now, this is a good time to just ask, what is the practical value of this talk? What are we talking about? Why? In some parts of the

country the power bills are based on an energy charge and a maximum demand charge. If that maximum demand is run in just about six months, and it might be a rather high peak, but you have to be penalized on the last six months, the future six months.

In other parts, as in our territory here, we pay on a minimum basis, which is 66 2-3 per cent of the contract demand. In either cases it is good economy to keep the ratio between the minimum and maximum as close as we can.

We can't give all the causes of these variations. We don't know how, in the first place. We can't to with the limited time that we have to go into all of it, but some of them may be given and I hope the talk will bring out more.

In the first place, it is interesting to see what the bills showed, the minimum and maximum in the following months. These are still without corrections for billing dates.

On the minimum the lowest bills are four in July; three in August; two in June and one in May. And on the maximum the highest bills were five in December; two in October; one in January; one in March and one in November.

This was clearly the seasonal variations, as you would expect, with the minimum in the mid-summer, and maximum in the mid-winter.

We may say, then, there are seasonal variations, but some of them are logically caused by holidays, vacations and curtailments, by a shut-down of the mills. In some

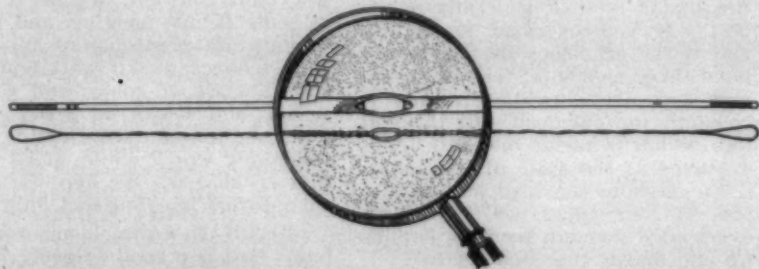
mills I know they lowered the speed whenever the "dog days" came along. Nobody knew what "dog days" meant, but you knew when they came. As winter approached and the hours of sunlight diminished, the kilowatt hours for lighting is increased. It is estimated lighting alone accounts for 46 per cent in the power bills, above the average. That is your mid-winter will take approximately five per cent a month average more than say along about October and March.

The temperature inside the mill does not change as much as might be expected. Whenever we think of winter temperature, we think about cold outdoors, but it does vary to some extent, and of course as it varies it affects the lubricant in the bearings and necessarily the power; a drop from eighty degrees to seventy degrees Fahrenheit will cause some increase in power of about 20 per cent; but when you have a drop in the room of from eighty to seventy degrees that doesn't effect the bearings, that drop of ten degrees, because that degree of heat will soon be brought up to the place where it was before.

Some of the older mills use the automatic humidity controllers.

There is another class of causes that are not seasonable. They are more really permanent; changes, additions to machinery or equipment, changes in speed, changes in construction even of finished product, change in operation hours, variance in number of days in billing. One month you might have twenty-four days, twenty-five or twenty-

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six; changes in different kinds of lubricant. That is especially true. Lubricant doesn't make the terrific differences that might be expected, but it does make a difference, even an oil that looks very much like the other.

One of the cases we were called on to investigate, the owner stated from the best of his knowledge they had not made any change in construction, operating hours or anything else. As a matter of fact, taking their books and actual machinery layout, we found they added equipment that ran up 90 kilowatts; that is about 80 per cent of their power alone. They had also made some changes in the roving and changed the lubricant. That is still under investigation, but I think all those causes are readily explainable.

Last of all, strange to say, the most improbable cause is due to the meter. That meter is a right accurate piece of equipment and stays accurate, as a rule. Generally speaking, an accident to a meter tends to slow it down, rather than speed it up. The meter is always on probation and all that, but we might as well get away from that, because they are accurate.

Here is a record of an old meter for a good many years. February, 1920, that meter was .07 fast, and the next year .70 fast; the next year .30 fast—these are parts of one per cent; this is no big quantity, .07 of 1 per cent—in January, 1923, .20 of 1 per cent slow; .60 of 1 per cent slow in 1924; .10 of 1 per cent fast February, 1925; .90 of 1 per cent slow in 1926; and 1927, .10 of 1 per cent slow.

There was very little, taking the average, very little on one side or the other of the ledger. We strongly urge that any unreasonable variations be promptly investigated, and that it be thoroughly kept in mind and believed that any such changes are due to nature and changeable causes, if you go far enough with the investigation.

Can we help these matters? Not so far as we can see. It looks like we must be as thrifty as we can in the use of power and especially keep down that maximum in December.

I thank you very much indeed. (Applause.)

The Chairman: Any questions, gentlemen?

MR. KING: I would like to ask Mr. Wrigley one question. What have you found to be the difference in power consumption as related to temperature? For instance, if a mill was running say at seventy degrees and then you would change that temperature to ninety degrees, what would be the difference in power consumption?

MR. WRIGLEY: I have to admit I never made a test and the only way to get at it is to get down and make a test.

A MEMBER: I would like to ask what sized load?

MR. WRIGLEY: The cotton mill runs about a two thousand load.

THE CHAIRMAN: Constantly?

MR. WRIGLEY: Practically constant load.

THE CHAIRMAN: I understand no adjustments were made to that meter during that time?

MR. WRIGLEY: It was adjusted every year. These readings are after a year's operation, and we checked it back with a standard. There is a certain amount of jolting up and down, but every year we put it back to what we called the standard, and these variations I showed are what happened in that year.

THE CHAIRMAN: And then the adjustments were made to the rotating standard, after this check?

MR. WRIGLEY: After these readings were made.

MR. KNIGHT: Didn't your load change each month?

MR. WRIGLEY: That load changes; that is, it changes considerably because those people made some power by steam, but taking the accuracy of the meter itself, these are the facts here.

A MEMBER: Maybe Mr. Fox can answer this. We have two meters—the Southern Power has one and we have one. They are read daily. We have a card showing what has come through each day, and if he shows more than we do we call him. Any way, our load changes very much. In a finishing plant you may have different weights of cloth going through; the machinery moves just the same, and we have cloth that will weigh three or four pounds to the yard, and we don't get the yardage, but we have heavier stuff to do, so it varies quite a lot in finishing.

In spinning and weaving you know more about that than I do, but the temperature, isn't that regulated by the carrier system? You wouldn't have any variation from the outside and inside.

THE CHAIRMAN: No, the temperature would be the same.

A MEMBER (continuing): Because I get those charts reading what the carrier system shows. Wouldn't you think that a shafting getting out of line would be the biggest thing?

MR. WRIGLEY: So much to say I wouldn't. If we develop any great load in any one bearing it has to be dissipated only in the form of heat. If there is much load there, say something around a kilowatt or two kilowatts, it is going to get hot. We have made a lot of tests on line shafting, but the results have always been disappointing.

A MEMBER: I changed a whole conduit and put it on ball bearings. We had to put one more machine in the mill and they wouldn't buy another motor, so we changed and put it on ball bearings and I got twenty more horsepower.

THE CHAIRMAN: We must remember this about lubricants too. We have to get away from the idea that metal will run on metal. When you start it by hand it is either on metal or—it is on metal, but as soon as you have speed and the lubricant is being pumped there isn't very much more power there by roller bearings or ball bearings.

MR. FOX: I would like to answer my friend Tom King so far as I could. Thirty odd years ago I made some tests and demonstrations for the Standard Oil Company in spinning rooms, and this peculiar feature stood out in these tests, that in starting a spinning frame up the power came into the frame and was

fixed at a certain point, but as the temperature of the bolster raised, due to the friction on the spindle, the power decreased until there came a point where the power fell and then they maintained a constant level, assuming the load was the same in the frame.

Now then, a drop in temperature in the room we will say from eighty to seventy degrees has got to counteract what I would call the resident temperature in the bearings of the bolster, as it takes considerable time for that bolster to drop its temperature so that it will go back in power consumption.

I think you will find there will be a very small variation in the power. This fact stands out very largely in the Southern Power Company's system, that the early morning, particularly Monday morning in put into the mills range about 12 per cent greater than it does about two or three o'clock in the afternoon, showing the temperature of the machinery has come to a constant level and continues that way. That is particularly so on Monday morning, so the question of temperature is one of relative bearing regarding the rest of the room, but do not overlook the resident temperature that is in the bearings after it has come up to that point. A sudden change I don't think would make much difference but if it was constant and remained there it might show some slight difference, Mr. King.

A MEMBER: I would like to ask one question and that is in overloading a motor, having too much load on it, more than it is supposed to carry, would that extra heat cause it to consume any more power than it would with an ordinary load?

MR. FOX: I will put it this way, the efficiency is with a full load; the motor is then generally at its best. If you overload it slightly and if the efficiency decreases you have three elements: friction, bearings and air. Now the friction is constant for any load, but the coil loss which is about one-half the— it varies as the scale of the load—if you double the load it runs the loss in four times, so if you get overloaded you can see how it piles up and makes the coils get hot.

A MEMBER: As Mr. Wrigley has said, what seems to be the very large variations in power bills need not be alarming. It has been the experience of the Southern Power Company in dealing with a great many mills, we know that the monthly power bills will vary, and that is due to a number of causes, as Mr. Wrigley has outlined.

For instance, a change of one day in the billing period will make a difference of approximately 4 per cent, assuming an average of twenty-five working days in a month. Those periods are kept as nearly uniform as possible, but we found one true test, we believe, for a comparison, and that is this: We hear a great deal of talk around cotton mills about the power cost in cents per pound. We contend that doesn't mean anything unless the analysis is carried further, because the Southern Power Company will have a rate and some other company will have another rate, determined in

different ways, we will say, but if they figure every month a unit of power, kilowatt hours, which does not change these certain definite amounts of whether unit of power basis or pound of product is figured and there has been no change in the class of goods produced by the particular mill in question, there ought not to be a big variation in your power; and, if there is a big variation usually it can be found, but too large a variation would indicate something had gone wrong in the mill, or the various sections involved, and while we are talking about this question of monthly variation of power bills there is a question very closely allied to it which I might suggest as a topic for discussion in some future meeting, and that is this: We will take two mills in the same class of product, and they will keep records, a production record and power record and figure up the kilowatt hours per pound of goods.

Now, that is a thing we are called upon to explain a good many times and if a comparison is made between two mills practically the same equipment and same hours of operation, and the mills are similar in a good many respects, and after a few adjustments were made in the kilowatt hours per pound of goods produced there was still a variation of some 8 per cent. We couldn't explain that.

I have here a comparison of eight mills making print cloth, an average kilowatt hour of a certain figure, but you take the average mill, the maximum kilowatt hours per pound if the power was 10 per cent higher than the average, and the mill with the minimum is 9 per cent below the average. The spread is practically 20 per cent in mills making the same class of product, and I think we could consider that as a topic at some future meeting, and if the various master mechanics interested kept a check on kilowatt hours on certain class of goods, and got together and began to analyze and see the reason, we would learn something worth while, and I think that is what we are here for, is to get information that will help us.

THE CHAIRMAN: Thank you, Mr. Lake, that is a good subject. When I got up I had something like that in mind. I was going to ask if any considerable number of master mechanics had kept any check on this very proposition to see where they stood.

A great many mills—in a great many mills changes are going on in the mills, and while of course the master mechanic can't hardly keep track of the changes being made, yet he can arrange to be advised of anything that would affect his power, and that is a good subject, and a good suggestion on your part. I think it would be a good idea for each one of us to begin to keep statistics along that line, if we are not already going so, and we will compare notes at later meetings.

MR. FOX: Mr. Chairman, how many of these boys really believe that they have any variation in their power bills? You brought the subject up for discussion and I presume there is a feeling. The Power Company can't explain

everything, but they can say this to you, that they are absolutely square in this matter. You know there is a funny thing about this. Some of you run your mill on four weeks; that is the official calculation; some of you run it on a calendar month, but the Power Company tries to get an equal number of days all through the year. The Southern Power Company will run twenty-five and twenty-six days, but we don't know where to place the twenty-sixth day. We can't put in February, because you are all looking for low power bills during the month of February, and heretofore we have been placing it in the month of December or March. I am going to change that, however, and put it in the month of August when you are loafing, but that one day has caused us tremendous amount of trouble.

For instance, in the month of March, 1927, when I say to you the cotton mill consumption of kilowatt hours was the greatest in the history of the Power Company, I would also say the cotton consumption was the greatest in the history of the mills. There is a direct relation between the kilowatt hour and the pound of product. You can't get away from it. There is a direct relation.

Now then, we have tried to work out an even number of days in our reading every month, but you know some months there are five Saturdays and some only have four and it is a rather difficult thing to work out an even schedule to read meters; and, then with all due respect to the management, I think they sometimes call you boys in and raise the dickens over the power bill being so much higher this month than it ought to be, when most of it is due to changed conditions inside the mill, or you may overlook the fact you have a twenty-five or twenty-six day reading on that bill, instead of twenty-four or twenty-five, whatever it happens to be.

There has to be an intelligent analysis, first number of days reading that the bill represents; secondly, what changes, if any; what has been the production and a lot of you know we sometimes shut down on the pickers, or sometimes the carding room is shut down part of the week, but the weave room runs right up to the last minutes, because that is the ultimate production, or the twisting room, that is the ultimate production. So, it is difficult. If any of you have any real thought in your mind about this matter for goodness sake let's thrash it out right now, for I tell you we are an honest crowd and we are trying to give you the best service that can be rendered, so if any of you have anything on your chest let's get at it.

THE CHAIRMAN: All right, gentlemen. Let's unload on him.

MR. KING: I think you better let him step outside. (Laughter.) The Lancaster Cotton Mills use some power, and we generate some ourselves. Sometimes we use quite a bit and sometimes we don't use but very little.

We have our meter on our line and they also have theirs. Our meters are all in series with their me-

ters and they have their man check their meters and we get somebody, some responsible party, to check our meters, so we think we are pretty well checked up, from the standpoint of the meter running correctly.

MR. FOX: Do they run fairly close, Mr. King?

MR. KING: We haven't had any trouble. We haven't seen cause to make any complaint about the meters; and another thing about that variation in power, we have been keeping records for several years, daily records, and quite often hourly records of our power consumption, and we have come to the conclusion that there is no variation within the electrical current. If there is a variation in consumption, there is a variation in something on the line.

I think it is all bosh as to variation; unless you vary it, it is not going to vary. Our operating engineer could anticipate what his load is going to be, if you tell him what the temperature is going to be in the room tomorrow, provided all the machinery went on, and we have meters on every department, showing whether they are all on or off. It seems to be entirely constant if your conditions are constant in the mill. We haven't found any variation on any cause we couldn't locate from all the records, and we have gone into the record keeping fairly well.

Mr. Fox over there knows he is my enemy (laughter); I have always been fighting him, and I have always tried to catch him. (Laughter.)

THE CHAIRMAN: Any other questions, gentlemen? If not we will pass on to the next subject. I beg your pardon, I was about to omit something which should be very interesting. George Wrigley is going to give a practical demonstration of resuscitation, and I am sure we all should be highly interested in that, if we are not. We have accidents around the plant and it is very nice to know how to handle those accidents, and Mr. Wrigley is going to show us how to resuscitate. Mr. Wrigley.

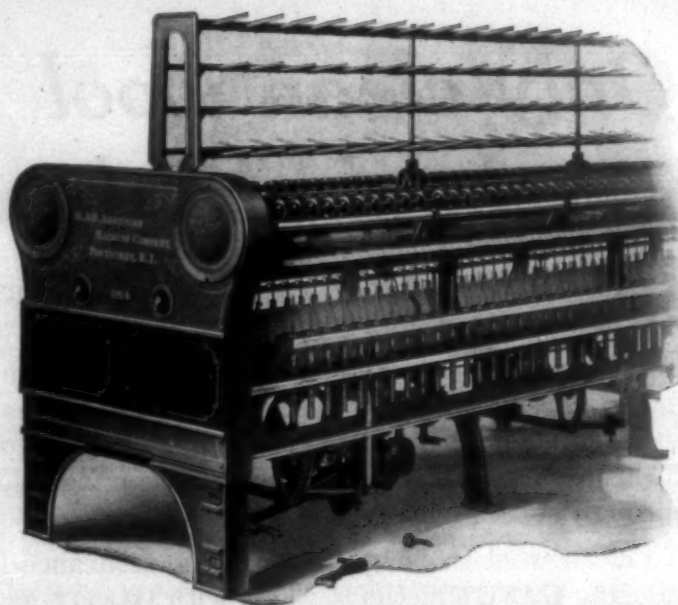
MR. WRIGLEY: Nearly every year somebody is "bumped off" around the mill in some place, either falling into the reservoir and getting drowned, or getting electrocuted in the electrical shop, or getting gassed, and this method of resuscitation applies to all three causes. They are all the same things. I want to emphasize that. We might say the "juice" is simply removed from the line—it isn't stopped. A man can get knocked out and his "motor" stops, we'll say, but you can get it started again, and he will go on as good as ever, but you leave him alone and he is going to stay dead.

I want to emphasize prompt action. Get on him immediately. If you have to send for a doctor, and we always want a doctor as soon as possible, send somebody else, but put the best man you have on that boy and get to working on him; the second thought is, get your technique perfected as soon as you can, and the third thought is to keep it up, and believe that he is alive and keep that belief in your head and keep on working.

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(At this time the practical demonstration was made by Mr. Wrigley, and two young men.)

MR. FOX: One of our men stated some years ago he was working in a general electrical shop and they worked on a boy for six hours and brought him back.

A MEMBER: I would like to say we furnish these resuscitation charts at about five cents a piece, and I think it would be a good idea if all your men had them in your departments—one of these charts in a frame with glass over it so it wouldn't get dirty.

I would like to state a doctor is the last man in the world to send for, when a man is electrocuted until you bring him to, because the physician, the first thing they do is to look at him and pronounce him dead. They are all right after a man is brought to, but never take a doctor's word for it; they always pronounce him dead in ten or fifteen minutes, and you can count on bringing them back in four or five hours.

A MEMBER: I just saw one answer to that. A man was electrocuted, and there was a man from the General Electric Company putting in some transformers over there, and when he first got to him he had them to open up his clothing here (indicating the chest) and I imagine for something like an hour or more he walked back and forth in front in front of him and threw buckets of water on him, and I didn't know whether that was a good thing to do or not, but that's what he did.

A MEMBER: Did he revive him?

THE MEMBER: Yes, sir.

THE CHAIRMAN: I understand Mr. Black, superintendent of the Beaumont Mills at Spartanburg has something to say on this big question.

MR. BLACK: Mr. Chairman, I didn't intend to have anything to say, I just asked Mr. Fox here if he thought these gentlemen would appreciate a few points on the variation in power bills, from the other side, of the machine shop or power man.

You know Mr. Post, those of us who used to read his advertisements, he always wound up by saying, "There's a reason," and there is a reason for the variation in power, but it is not often that the master mechanic can find these reasons, and a few pointers on that will probably be timely, but when you have your power bill vary and you begin to look about you generally find some reason for it.

We will take for instance, down in the picker room there are times when we as superintendent and overseers change our number. It is necessary to make a heavier lap probably in the picker room, and a heavier lap feeding through the

picker will consume more power, though it may be small. A heavier lap on a card will pull heavier, and will consume more power. If the boss carder sees he is getting a little low on production, oftentimes he go and speed up his doffer. For instance if he is making eleven revolutions to a minute, he will speed it up to twelve and sometimes fourteen. We all know the increase in speed consumes more power and that is true throughout the plant.

You take for instance, in the spinning room, there are few of us think about what the increase in the weight of a traveler on a spinner would amount to in power. Mr. Wrigley could tell us more about that probably than anybody I know of, but when we often change travelers, and especially when the weight of one traveler is multiplied by fifty or seventy-five thousand spindles, at a high rate of speed as it travels will effect the power bill.

There are some mills, and I believe most of the mills in this day and time are constantly changing. It is surprising to know the difference in power consumption in the width of cloth. If you change from a thirty to thirty-six inch fabric, you have put more strain on your harness, and they are not inspected and looked over and retimed because of the additional strain brought about by the width; and then sometimes we change from a 64x60 to an eighty square, and it takes more power to run that eighty square than it does the 64x60, and there is always a reason, gentlemen, when your power bills vary, and if you begin to look around you will find the reason.

THE CHAIRMAN: The next subject on our program is the "Care and Maintenance of Steam Power Plants," by David J. Kerr, general operating superintendent of the Champion Fibre Company of Canton, N. C. (applause)

MR. KERR: Mr. Chairman, and In.

Mr. Kerr Speaks.

In considering the question of the care and maintenance of a steam power plant, we should first fix in our minds that all questions of care and maintenance resolve themselves into dollars and cents, that is, all questions except safety of life and limb. The practical safety of the operatives should always be prerequisite to operation. With these thoughts fixed in mind we can always find a wise solution for the various questions of care and maintenance.

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D. H. HILL, JR.
JUNIOUS M. SMITH

Managing Editor
Associate Editor
Business Manager

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Single Copies	.10

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Lint Yield Per Acre

IN a report issued last week the government showed that 48,730,000 acres were planted in cotton and 47,087,000 were picked.

They also showed that on the basis of the acres picked the crop of 47,914,000 bales last year was equivalent to 181.9 pounds of lint per acre.

As each 500-pound bale contains on the average 477 pounds of lint cotton and 23 pounds of bagging and ties, this shows that the average yield per acre last year was .381 bales.

We again assert that the safest way of forming an opinion of the size of a cotton crop is to consider the number of acres multiplied by the yield per acre.

Statistics of recent years give us the following information:

	Pounds Lint Yield Per Acre Harvested	Yield Per Acre in Bales			Bales
			.30 bales per acre means		42,713,000
			.31 " " " "		13,137,000
			.32 " " " "		13,561,000
1917	154	.32	.33 " " " "		13,984,000
1918	150	.34	.34 " " " "		14,408,000
1919	161	.34	.35 " " " "		14,832,000
1920	178	.37			
1921	124	.26			
1922	141	.30			
1923	131	.27			
1924	157	.33			
1925	167	.35			
1926	182	.38			

Based upon the records of the past ten years, it is safe to assume that the average yield per acre this year will be somewhere between .26 and .38 of a bale per acre.

There is no reason to expect the record low yield of .26 nor is there any sound reason to expect the high yield of .38 bales per acre.

With less fertilizer, more boll

weevils and the uncertainty of securing the fine weather of last year, there is little reason to expect the same large yield per acre.

We believe that it is reasonable to assume that the average yield per acre will be somewhere between .30 and .35 of a bale per acre.

Prior to the flood, most private estimates indicated a reduction in acreage of from 10 to 13 per cent and that has of course been increased by the area flooded.

The Fairchild Analytical Bureau estimate total cotton acreage under water 3,324,944 acres, production of which in 1925 was 2,245,294 bales and in 1926 was 2,066,913 bales.

The yields per acre as cited above were based upon acreage harvested, which in 1926 was 47,087,000.

If 10 per cent less acreage is picked in 1927 the number will be 42,378,000.

With 42,378,000 acres

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If the reduction proves to be 11, 12 or 13 or more per cent the figures given above will shrink accordingly.

To believe in a crop in excess of 15,000,000 bales we must believe that in spite of the 3,324,000 acres under water, as shown by Fairchild, which by itself represents 7 per cent of the cotton acreage harvested last year the total reduction will not equal 10 per cent.

We must also assume that in spite of the reduction in fertilizer and the unfavorable weather that has already prevailed in Texas the yield per acre will be in excess of .35 bales per acre, which figure is

considerably in excess of the average production per acre in recent years.

Just to show the possibilities we cite the fact that a 13 per cent reduction and a yield of .30 bales per acre would mean a crop of only slightly more than 12,000,000 bales, which would mean 25-cent cotton.

We do not wish to be an alarmist and we are not urging any one to buy cotton, but too many mill men are sleeping soundly in the belief of an over supply of cotton, and we want to arouse them sufficiently to cause a sane study of the situation.

If we were asked to give our idea of the probable size of the 1927 cotton crop, we would say between 14,000,000 and 15,000,000 bales, with chances in favor of the lower figure.

Wolf Blood

MEN who have traveled in Russia and in other countries infected with timber wolves state that the wolves will travel with a vehicle for a long distance, apparently in admiration, always keeping just out of the range of guns, but the minute a horse becomes disabled or the passengers become injured or sick, the wolves seem by instinct to know that fact and quickly close in upon them and attack.

Three prominent mill men in the South have recently met with financial disaster and the cries of the wolves can be heard as they close in upon them.

While those who met with misfortune were prosperous or were thought to be prosperous, men praised them and sought their business, but now that they are wounded many of the same men, having the instincts of the cowardly wolves, have turned upon them and are circulating reports, many of which are manufactured by the human wolves, as a means of better tearing and rending.

When men get into financial straits they sometimes become desperate and take chances and do things that they would not have done under ordinary circumstances, and the slightest irregularity is seized upon and exaggerated by those who, with the wolf instinct, are ravenous for the attack.

Some scientist has said that every man and woman resembles some type of animal and has some of its characteristics.

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They call him lucky — "Lucky Lindbergh." But he needed more than luck to carry him safely through a 3,600-mile race with death. And he had more than luck. Courage and self-reliance, determination and skill were some of the elements that made his "luck."

Lindbergh's job was to fly across the seas. He approached his job with perfect confidence in his own ability, determination to carry through and the knowledge that he must depend entirely upon his own efforts. There was no one to help him.

Few of us will ever attempt anything that will begin to compare with the spectacular achievement of young Lindbergh. But those of us who tackle our daily jobs with the same sort of spirit, they'll call us "lucky" too.

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Technical Service

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Alert manufacturers adjusted their organizations and methods to the new demands created by this condition.

Our organization has not failed in this respect. It has kept abreast as it always has in the past—

By exhaustive chemical research, by practical experimentation and by constantly aiming at even higher quality of products.

Result!—Highly specialized products for the various branches of the textile industry that are uniformly superior, that function properly and with unusual economy.

Our laboratory staff of skilled chemical engineers knows your problems intimately.

Our sales organization comprises men who fully understand the benefits to be derived from AMALIE TEXTILE SPECIALTIES.

Our facilities and organization are always at your disposal. Acquaint us with your problems!

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SOUTHERN TEXTILE BULLETIN

Member of Audit Bureau of Circulations
Member of Associated Business Papers, Inc.

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THURSDAY, MAY 26, 1927

DAVID CLARK
D. H. HILL, JR.
JUNIOUS M. SMITH

Managing Editor
Associate Editor
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MILL NEWS ITEMS OF INTEREST

Chester, S. C.—The Aragon-Baldwin Cotton Mills have let contract to the Piedmont Contracting Company for repairs to the warehouses.

Houston, Tex.—The Houston Hosiery Mills, which recently increased their capital stock, will install 15 additional knitting machines.

Salisbury, N. C.—Good progress is being made to the addition at the Kestler Manufacturing Company. The work includes the building of a new picker house and bale opener room. Geo. C. Bell, Charlotte, is the engineer.

Scottsboro, Ala.—The Bungalow Rug Company has almost completed construction of a two-story mill building, will install knitting machines on one floor and looms on the second floor. The number of machines has not been definitely determined.

China Grove, N. C.—Reorganization of the machinery at the Patterson Manufacturing Company, which has been under way for some time, as reported, is about completed. Changes in the picker room are being made and a new slasher and weave room constructed. Geo. C. Bell, Charlotte, is the engineer.

Greenville, S. C.—The Brandon Mills have completed installation of new opening and cleaning machinery and have also equipped one-third of the plant with Barber-Colman automatic spooling and warping equipment. The company has also made a number of other improvements.

Lincolnton, N. C.—The Rhodes-Rhyne Manufacturing Company, which has an addition under construction, as reported, will install 1,000 spindles and 18 looms. At present the company operates 3,024 spindles and 108 looms on wide sheetings and dimity bedspreads.

The company is also building a slasher room and dyehouse. Geo. C. Bell, of Charlotte, is the engineer.

Troy, N. C.—The sale of the controlling interest in the Rhyne-Anderson Mills has been completed. E. O. Anderson, of Charlotte, who has owned the controlling interest in the company, and was president also, disposed of his interest to Wesley Heath, Charlotte capitalist, who will succeed Mr. Anderson as president, effective at once.

Burlington, N. C.—The Pen-Co Hosiery Company, to manufacture men's hose, is the sixth new hosiery manufacturing plant to be established here since the first of the year. John M. Coble, coca-cola bottler and capitalist of this city, and Ernest Pennington, prominent business man, are the chief stockholders. The plant will be established in the loft of the Coca-Cola Building.

THE FARISH COMPANY

COMMISSION MERCHANTS

100 WORTH STREET
NEW YORK

FRED'K VIETOR & ACHELIS

COMMISSION MERCHANTS

65-69 Leonard St.
New York

DICKSON & VALENTINE DEPT.

Newberry, S. C.—The Oakland Cotton Mills is taking out 640 old looms and replacing them with up-to-date ones. They are also contemplating building 50 new houses, so as to be able to house operators to run the machinery night and day.

Newberry, S. C.—At the Mollohon Mill 30,000 more spindles are being installed. Also, the Southern Power Company is erecting a small sub-station there to furnish more power. The mill is painting all the houses in the old part of the village.

Union, S. C.—A charter has been granted to the Liberty Fabrics Corporation, of Union, manufacturers of silk fabrics and women's silk underwear, with capital of \$350,000, fully paid in.

The firm has taken over the business of the Liberty Fabrics Corporation, of Brooklyn and Tonawanda, N. Y., and both plants will be moved here about June 1 when the new building is expected to be completed.

Spartanburg, S. C.—A dividend of \$10,980 or 3½ per cent on \$360,000 preferred stock, was declared at the annual meeting of stockholders and directors of Drayton Mills, it was learned from Ben W. Montgomery, president of the mill.

Mr. Montgomery was re-elected president, Gabriel Rouquie was re-elected secretary and treasurer and A. T. Greene was appointed assistant treasurer of the plant. This is a promotion for Mr. Greene.

Drayton Mills, which manufactures fine lawns and fancy goods, has 842 looms and 44,800 spindles. Steam power is used.

Little Rock, Ark.—The Little Rock Textile Company, recently incorporated here, has purchased a tract of land in the eastern section of the city as a factory site for \$10,000. The company is capitalized at \$50,000 and C. V. Hoke is president, and Manette Hoke, secretary.

Officials of the company announced that work on the new plant will be started at once and rushed to completion. The company will engage in the manufacture of cotton cord, twine, rope and other cotton products.

Burlington, N. C.—The National Dye Works, Inc., recently reported as enlarging its plant, plan the following improvements: New steam plant, five 150 h. p. boilers; new addition to finishing plant of 30,000 sq. ft. for providing space for increased production, cost \$135,000; will install additional boards furnished by Paramount Textile Machinery Company, 337 Madison, Chicago, and dyeing machinery by American Laundry Machinery Company, Norwood Sta., Cincinnati, and other auxiliary equipment, including extractors, dryers, etc.

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Woodruff, S. C.—T. C. Thompson Construction Company of Charlotte was given the contract for the construction of the weave shed, an extension to Mills Mill No. 2. The bid was \$165,000.

Work will begin on the building next Monday. The total amount to be expended on the extension is \$750,000. These will be let at intervals of every few days during the next month.

The addition to the mill will house 10,000 spindles and between 700 and 800 looms, and included in the estimated cost of the complete extension will be 50 to 75 cottages that will be required to house between 200 and 250 operatives that will be added to the present force now numbering 200 persons.

S. T. A. Program

THE tentative program for the annual meeting of the Southern Textile Association, to be held at Kenilworth Inn, Asheville, N. C., June 17 and 18, is given below. Secretary J. M. Gregg states that the program is subject to several minor changes because definite acceptances have not been secured from some of the speakers.

Mr. Gregg urges all members to make reservations at Kenilworth Inn as early as possible. The hotel is operated on the American plan, with rates from \$7 up.

The Program.

Friday Morning Session, June 17, 10 O'clock.

President's Address—By W. H. Gibson, Jr.

Reports from Chairmen and Sectional Divisions:

Carters' Section: J. O. Corn, Chairman.

Spinners' Section: Carl R. Harris, Chairman.

Weavers' Section: L. L. Brown, Chairman.

Master Mechanics Section: H. H. Her, Chairman.

Eastern Carolina Division: C. M. Black, Chairman.

Report for Texas Textile Association.

Address—"The Buyer's Viewpoint in Purchasing Goods, and the Selling Value of Quality and Uniformity of Product," Richard G. Conant, Wellington, Sears & Co., Boston, Mass.

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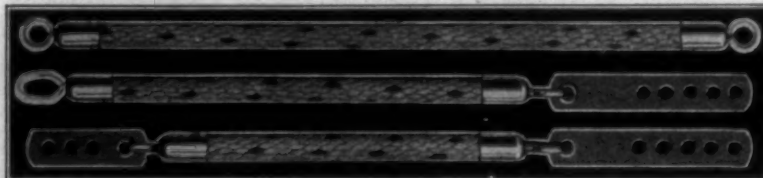
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South Carolina

Address—"Human Relations in Industry," H. G. Winget, Supt., Victory Yarn Mills Co. and Winget Yarn Mills Co., Gastonia, N. C.

Afternoon Session.

Golf Tournament—Asheville or Biltmore Country Club. Golf committee: W. W. Moore, Allis-Chalmers Mfg. Co., Charlotte, N. C., chairman; Fred Crowell, E. H. Best & Co., Greenville, S. C.; Sam Rakestraw, National Gum & Mica Co., Athens, Ga.

Friday Night.

Banquet—Kenilworth Inn.

Address—"Relation of Church to Industry," Rev. J. W. Speak, Spartanburg, S. C.

Saturday Morning Session, June 18, 10 O'clock.

Remarks by George S. Harris, Pres., American Cotton Manufacturers' Association; also President Exposition Cotton Mills, Atlanta, Ga.

Address—"Work of the Cotton-Textile Institute," George A. Sloan, Secretary, 320 Broadway, New York City.

Remarks by the Presidents of the State Cotton Manufacturers' Associations.

J. M. Gamewell, President, North Carolina Cotton Manufacturers' Association.

J. C. Evins, President, South Carolina Cotton Manufacturers' Association.

W. H. Hightower, President, Georgia Cotton Manufacturers' Association.

Business Meeting.

Secretary's Report.

Election of Officers.

Next Meeting Place.

Presentation of Emblems.

Arkwrights—These will be presented to those who have submitted tests and have had them approved by the Research Committee and have been elected to full membership into The Arkwrights.

Service Medal—This medal is given annually by S. B. Alexander, Southern Agent, Crompton & Knowles Loom Works, Charlotte, N. C., to the member of the Association who has done the most during the past year for the betterment of the industry.

President's Medal—Given annually to the retiring President.

Adjournment.

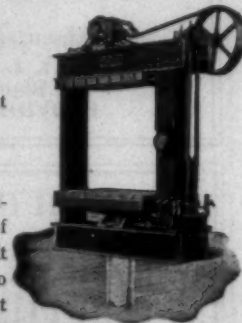
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South Carolina Representative

Master Mechanics Hold Interesting Meeting

(Continued from Page 18)

more of coal per day or other equivalent fuel. This type of steam power plant is essential, but incidental to the enterprise.

The physical conditions of a steam power plant might easily be estimated from the cost of power per k. w. hour at the switchboard, or the cost per thousand pounds of steam at the header.

The condition of the mechanical equipment and the skill the operators use in handling the equipment are two great factors bearing on the cost of delivering power from the steam plant.

Here on the shoulders of the chief engineer, or the superintendent of power, rests not only the question of care and maintenance, but efficient steam and power production and the guidance of a mediocre personnel as well.

When his plant is built for him, more or less, he is expected to maintain it with very little replacement of material, in spite of the fact that his very process of operation involves the constant melting down of refractory, the burning up of iron and the depositing of salts.

Through the channels of this society this man can obtain and study many fine expositions of the most refined art of steam and power production.

But who will tell him how much furnace iron he can afford to burn up in his plant? Who can tell him how high he can run his Co2 without unduly melting down the refractory? Who can tell him how thick he can permit his boiler scale to grow before it will be advisable to remove it? Must all learn from individual personal experience, or be guided by the super-plant and attempt to follow the practice laid down for such?

There is little we can say for the benefit of the man in charge of the average industrial plant in relation to his questions of care and maintenance, unless we can have before us some of the general specifications of his plant. His is usually a specific problem peculiar to his plant and the demands for steam or other power required by the industry. If, however, he will visualize his task as the conservation of, let us say, a million dollar coal pile this will at once bring into sharp outline many of his problems.

The relatively small economies of a day's operation, when referred to the million dollar yearly coal bill, will at once, take on their proper importance. We should not overlook the tremendous opportunities or benefits derived from vocational training for the operating crews. If one of his subordinates does something improperly because he does not know the proper procedure, the superintendent is more to be criti-

cized than the man. One of the superintendent's specific tasks is the instruction of his crew. He should also plan to take advantage of the competitive incentive in human nature. The installation of the necessary guiding information in an easily available manner promotes this competitive instinct. Daily records showing each operating shift, how they stand and how their competitors stand, will stimulate the interest of these operators to such an extent, that they themselves will take an active part in maintaining first class equipment. Should this competitive instinct be further aroused by rewards in the form of a bonus, depending upon results obtained, there can be no question that benefits can be gained, not from operation alone, but from maintenance and low cost of repairs as well. The over-all boiler plant efficiency will be materially increased thereby.

Base ball, foot ball, none of the games we play and enjoy, would have any interest if we did not keep score. Make the task a game by keeping score.

Invite one individual to excel the other, or better still combine co-operation with competition by inviting the crew as a whole to better it's best previous performance. Reward the better performance if you will but in any event keep score.

The chief engineer, or superintendent of power of such a plant as we have considered, must do more

for the conservation of this million dollar coal pile than generate the steam and power efficiently. There will be steam used for manufacturing purposes. He should endeavor to conserve the manufacturing steam. Steam saved has the finest effect of all of his efforts on his million dollar coal pile.

Among the many outstanding factors in connection with the operation of steam power plants none, I believe, are of more importance than man. It is necessary, therefore, that every man in the operating crew be offered every opportunity to become familiar with the details of operation and in this connection, let me again call attention to vocational training, or for lack of a better name, "Education on the Job."

First: The knowledge of equipment.

Second: The efficient burning of fuel.

Third: The efficient use of heat in the generation of steam.

Fourth: The profitable utilization of steam in prime movers and process work.

In this connection, let me suggest the following procedure: if the plant in question is operating all around the clock on a three shift plan, two lessons per week can be arranged under the direction of the chief engineer or superintendent of power, as head master. Let us suppose the second shift, which under all prob-

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ability, will be coming during the afternoon, will have its study period before going on duty. This plan has the advantage that the entire crew and putting it into practice. An is taking the lesson into the plant other advantage is, that the men are fresh and their minds more alert than if their study period was arranged after coming off duty. With this schedule in operation twice a week for, say one hour on Tuesday and Thursday, this would mean that every third week new lessons would be taught. Great care, of course, would have to be exercised in preparing suitable instructions which should be done in a very simple and practical manner, remembering that the class as a whole can only travel as fast as the weakest member. It has been the writer's privilege to put this type of program into operation and later a very great pleasure to observe results far in excess of the effort. A very great number of steam power plants throughout the country are using methods similar to these with gratifying results.

In conclusion I wish to bring to your mind the intense competition today between men for position and business enterprise for existence. This condition, an entirely healthy and sound condition for progress, nevertheless requires that we utilize every available means to increase the efficiency of both men and methods, to the end that we will not be eliminated from the struggle either as individuals or as an enterprise.

THE CHAIRMAN: Gentlemen, we have a little time before we go to lunch, and if any of you have any particular power plant problems or troubles, let's hear them. Boys, there is some fellow here had the same trouble you had and he has solved his problem and can help you solve yours. Please don't hesitate.

Pure Water for Steam.

G. E. BROWN, Jr. (of International Filter Company, Chicago): I

wonder if I might say a little word? I was very glad the question of steam purification was brought up in this meeting. I happen to be with the International Filter Company, just ordinary water purification men, and during the last three years we have made experiments in the Erie plant of the General Electric Company on steam purification, dirty steam, and we have found that by installation of what we call steam purifiers placed directly at the outlet pipe for your boiler, has saved on the average of 60 per cent to 200 per cent, in this one particular plant.

Now, that has been actual experiments, carried out before any of our products had been offered to the steam plant operators. It is not hearsay, and it is not advertising; it is absolutely facts, and as the gentleman said, your concentration in your boiler is a very great factor in taking care of dirty steam. If your plant is small and you haven't got the money to invest in steam purifiers, the thing is to keep an absolutely clean boiler on the inside so there will be no foaming, that no water will come over in your steam.

The American Public Health Association, and the American Society of Mechanical Engineers, devised methods to test the amount of water coming over in steam, and I don't think I am wrong in saying that in the usual steam plant where the operator is taking good care of his boiler and the concentration in your boiler, you are only getting 98.5 per cent and the rest or 1.5 per cent of the water comes over in your steam. Naturally, if your water contains about 250 grains per gallons, of solids in your water, that 1.5 per cent is going to contain solid matter. Now, that solid matter will deposit itself in your valves and your fittings, your elbows and turns in your steam lines. It will deposit itself on your turbines, if you use them; it

will deposit in your cylinders in your steam engine. That means your film of oil you are using in your steam engine has got to not only protect the metallic portions inside that need lubrication, but they have got to form a film over that deposit. The deposit is usually so hard that it will scrape the inside of your engine; naturally that has to be lubricated more, and there is where we have found the marvelous savings that have been affected by steam purifiers, that is after the water has gone and has been converted into steam.

Nothing has been said about the water going into your boilers. You will find that out from your own experience when you have to remove tubes, but I think that would be a good paper to be read at one of your meetings, in conjunction with the gentleman's paper on the maintenance of power plants, is the kind of water you are using in your boilers before it goes in, and what takes place in your boilers after it is used.

MR. YOUNG: I would like to have a number of the mechanics here state what method they have of purifying their steam with the present equipment. It is very nice to get up and talk about steam purifiers, and so forth, but when you go to your boss to get him to buy one he will say, "What are you talking about? Get you a barrel of potash; that'll take the scale off." I am speaking from experience. I don't suppose there is a master mechanic here but what has got scale in his boiler. Perhaps a lot of them are like ours, it is a small plant; I have two 125 h. p. boilers. We run by electricity chiefly; we only use steam for operating a certain portion, but my company wouldn't spend fifteen or twenty thousand dollars, or two thousand for a steam purifier. They would tell me to find something to clean that boiler out

with. That's the answer I get and most of us get that. I am speaking from experience. I have been in this game a long time.

One fellow will come along with a little vial of something and tell you that's the very thing. I sent a specimen of our water to the Hartford Insurance Company, also the Dearborn people of Chicago, and they varied some, and the analysis was all written out in chemical terms and it didn't mean anything to me when it came back, and I suppose to the average cotton mill master mechanic that analysis doesn't mean anything, because to get the equipment necessary to take care of this water, prescribed by the people who make these analyses, that is a physical impossibility for most of us; we can't do that, but I believe it would help every master mechanic here to get the other fellow's experience as to the method to be used with the equipment he can get.

Now, in my case I have got a bucket riveted on an inch and a half pipe, three feet above my boiler, and I make my firemen every two days mix a solution of soda ash and put it in the boiler and blow it off two or three times a day. Formerly, one time a month I made him take the man-hold off and mix up fifty pounds of soda ash and pour in there and boil for twelve hours, but from the system I now use I apply it two or three times a week through the feed pump and I believe I get better results. I may be doing the wrong thing but I am doing the best I can with what I have got to do it with. I would like to hear from someone else.

A MEMBER: Mr. Chairman, and gentlemen, this gentleman that has just spoken I think is having the same difficulties most of us have had. I have been in the master mechanic's field a good many years, and I had the same experience he had.

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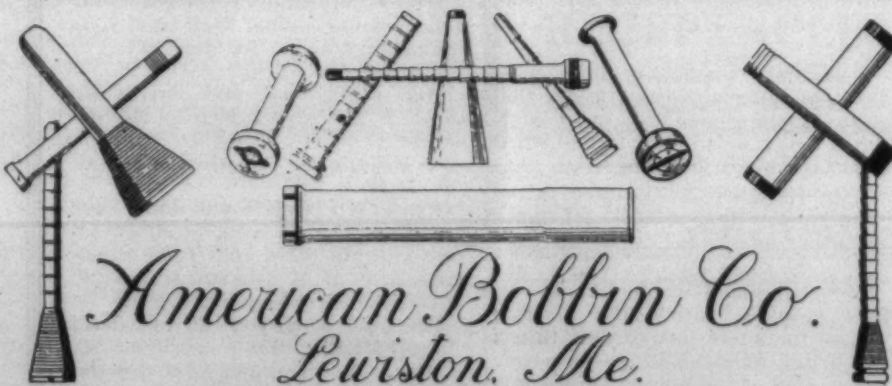
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Charlotte

And that is the thing that happens in most plant, is just what he brought out there, you either can't get it, or you can't read some instructions in a paper on boiler advertisements of this treatment or other kind and say "that's the thing," because every water requires different treatment. It requires a lot of investigation and maybe installation of equipment which you can't get.

We really want to consider in small plants where we can't spend all this money, some way to determine how to get rid of the scale without spending so much money. That has been the weak point in the game all along, up to the present, in that there was no way a man could by some simple instrument take a sample of this water every day until the concentration existed in that water.

There are now several on the market you can get and you can in five minutes, any of your firemen, can determine how many grains per gallon there are in the boiler. This instrument doesn't cost much, and it is practical and from actual test compares favorably with the chemical analysis of the water we send to the laboratory. Most of the scale that forms in the boiler is of two kinds, one of which hardens when heated to a high temperature, and another which forms a clot when heated to high temperature.

A good deal of the treatments that you see advertised the real principle of them all is the same, I think. I don't claim to be an expert on boiler treatment, I might say, but the real thing is to reduce the scale formed into a sort that will instead of hardening on the boiler when the high temperature is reached, will form a clot which can be cleaned out.

Soda ash is one of the most common chemicals used for that, and you can get that around most any bleaching plant, and that is what soda ash does on hard scale forming properties. It changes the nature of the scale into a soft scale which can be blown out through the blower.

Assuming we have this scale forming material formed into a clot, the only thing necessary is to know when it is time to blow it, and when you have blown enough.

THE CHAIRMAN: Gentlemen, we still have a few minutes, if there are other questions.

If no one has any questions to ask along that line I would like to put this question before the meeting closes, there are lots of new things coming on the market for the power plant. One of the newest things is a pulverized coal apparatus. There may be some of you gentlemen present who have had experience with pulverized fuel apparatus, or know something about it and I would like to hear somebody say something along that line.

We have no experts on powdered fuel?

Then I would like to ask what your ideas would be on this question. What should be the determining factor in the selection of a turbine as a prime mover? There are several types of turbines on the mar-

ket and in use. Some of you change sometimes and if you had to buy a new turbine what would be the determining factor in your selection?

A MEMBER: I would like to ask which is most efficient, the horizontal or vertical type.

THE CHAIRMAN: Can some turbine expert answer that question for the gentleman?

A MEMBER: I won't pose as that expert, but I will try to answer it. As I understand it, I believe you will find the vertical turbine was originally a little bit more efficient, but due to the difficulty of maintaining the bearings in the vertical type, it has been practically discontinued in this country, and the horizontal is almost universally used now.

THE CHAIRMAN: Will somebody please have something to say on the merits of heating with plant steam from your prime motor such as an engine, or as compared with heating the same with an economizer? How about that? Anybody want to talk on that? How many master mechanics in this meeting here have economizers? (4) Might I ask some of you gentlemen to state the results you get with those economizers, what temperatures you are able to obtain?

A MEMBER: I will state, Mr. Her, in our plant at the Union Bleacheries, we have seven 250 H. P. boilers. Our make-up water and our condensation coming back from the plant would run about 180 degrees Fahrenheit. This water entering the economizer during the eleven hours shift, it enters the boilers at 180 degrees Fahrenheit, and enters the economizers on an average of about 255 degrees. Now, during the night period, eleven hours or twelve hours, the condensation coming back to the boiler feed pump, and we use a little tempering line from the outlet end of the economizer back to the discharge end of the pump, and that picks up that water at 190 degrees, and puts it into the boilers at an average of 220 degrees.

MR. FOX: In other words, your condensation coming back from your mill ranges about 180 degrees?

A MEMBER: Yes.

MR. FOX: And you put it up through the economizer to 255 degrees?

A MEMBER: An average of 255 degrees.

MR. FOX: At night you don't have any return from your mill, therefore you put it through your economizer?

A MEMBER: Yes, sir.

MR. FOX: And you raise it what?

A MEMBER: 220.

MR. FOX: You get it at 190 degrees?

A MEMBER: Yes, sir, but we use a tempering line.

MR. FOX: In other words, you raise it at night time practically 35 degrees?

A MEMBER: 220.

MR. FOX: I beg your pardon. In other words, you raise it 75 degrees with the water returns coming from the boiler in day time and 130 degrees during the night?

A MEMBER: Yes, sir.

MR. KNIGHT: We had a similar arrangement at one place. We would lift ours to about 220 degrees. It

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ROSCOE A. MARVEL
MANAGER

would go through the feed water pump, through the economizer and back about 220 degrees.

THE CHAIRMAN: The temperature of your returns are how much?

MR. KNIGHT: 195. We have no economizer. We go direct to the feed pump to the boiler. I was at a plant where we had this closed feed and we went through an economizer, but the question there was a baffle of the chimney draft, but we lifted that up to 220 and 230 degrees, but answering your question, have you got room for it and have you draft room enough. If you haven't, you can put in a heater but not an economizer.

THE CHAIRMAN: Where you have the conditions that would be satisfactory, would you prefer a heater or an economizer?

MR. KNIGHT: I would have the heater first, I think.

A MEMBER: I will state, Mr. Her, in our plant the condensation coming back from the machines is 180 degrees. This condensation is put into an open heater and at the pump we get on an average in the day time of eleven hour shift, about 203 degrees. Now at night time of course being on atmospheric temperature we keep the rolls from sweating and causing corrosion, we have a temperature line from the outlet back into the discharge pump, which boosts that temperature. Well, you can boost it to about where you want it. We generally boost it about 90 or 100 degrees and we put it into the boiler at the outlet at 220 degrees, but I think an economizer is a paying proposition in the steam plant.

MR. KNIGHT: If you have draft enough, but if I only had to have one I think I would prefer the heater first.

THE CHAIRMAN: As a matter of fact, isn't the general practice in the installation of economizers to install induced draft? Don't the two generally go together?

A MEMBER: Yes, sir.

MR. KNIGHT: You see, gentlemen, it is this: All your gas is going up the chimney and all those are going to waste and when you put an economizer in in connection with the feed water heater, all that heat is reclaimed and you get the benefit of it in your fuel.

Why I spoke of that we changed from coal to motor and they wanted the economizers taken out, and then there was a question of raising the chimneys and the foundations weren't big enough, but we left the economizers there; they are there now.

PROFESSOR EARLE: I think the question has been brought up about the draft being one of the important questions. It is almost necessary to have some induced draft with the economizer. In the first place, there is more friction and in the fact that the economizer cools off the gases, which is the cause of the draft. The economizer will certainly economize in a great many plants. The size of the plant I think has something to do with it. I think in a small plant there is a question whether it would pay. With a large plant it probably does pay. It has been mention-

ed that we get the heat from these gases rather than waste them. That is true, but on the other hand we must take into account the fact we have to use some of this heat in producing the mechanical draft which is necessary to attain in connection with these economizers, and also the fact the interest on the money invested in the economizer has to be taken into account also, but generally speaking in a fairly good sized plant an economizer would ordinarily pay.

A MEMBER: There is one advantage to the economizer there is nothing said about, that I found out. On the No. 2 plant I had charge of, I have an economizer and have had it there about twenty-five or thirty years. In the No. 1 plant I do not have an economizer. Any economizer is nothing but a low temperature boiler, and it will save at least and hold, I should judge something like 90 to 95 per cent of your deposit in your water of foreign matter, and if you flush and wash that economizer—I don't say I have the correct way, but I reverse the rotation of the water. Every Saturday when we wash that and blow it off until it runs clear, put through with a fire pump, and I find the boiler the economizer supplies have no scales to amount to anything. It will run a year without cleaning. I ran a turbine through every year. I was advised by a boiler inspector not to do it every year that it was too expensive to do, but I took his advice one year and I found that year it got too dirty, and I run turbine through it every year. Now, on the No. 1 plant where we have no economizer, I clean it every year with vibrating tube cleaner and put them in there and scrape scale and I get some scale. I use something like twenty or twenty-five pounds of common soda in with the feed water in my make-up tank, and that supplies my pumps every week, but an economizer does pay, if you leave everything else out of it. The economy in the way of fuel you get and temperature I would get when I had natural draft; several years ago we changed over to forced draft. I get a temperature in any economizer sometimes as high as 285 and from that down to 265 degrees, but on an average about right around 265 or 270 degrees, and it does pay, if it didn't do anything but take the deposit out of your water it would pay to install it, but it will save fuel.

THE CHAIRMAN: In those plants you have the arrangement which makes the difference very noticeable, having two plants, one with an economizer and one without.

A MEMBER: Yes sir; one has an economizer installed about 31 years ago, and the other has no economizer but it has a feed water heater. In fact, I have two. The feed water moves through between the low pressure boiler in the condenser in one, and takes the exhaust from the auxiliary and then we catch our drain water discharged from slashing, and in the heating season we catch it from heating cause in a tank, and that supplies water for the feed pump. But on the No. 2 plant we have an economizer. It is separate and distinct. I have a way of

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connecting the feed lines together that I can use in an emergency and feed on through the economizer, but I don't use that way only in emergency.

MR. FOX: That last speaker made a statement there which I think we are passing over, and that is he blows down his boiler on Saturday.

THE CHAIRMAN: Not the boiler.

MR. FOX: Your economizer. That is one of the best practices in the steam plant if you can follow it up; never blow off a boiler until all circulation has been stopped and your steam has fallen to its lowest point.

MR. GREGORY: The reason I reverse the rotation of the water, the water enters the economizer in the stack there and comes out at the other end, which is the proper way for it to do, and when I flush that out I just reverse that rotation in the way the water goes in, and by doing that if it hasn't gone in all the way I push it back and make it go out through the blower, and that economizer has been running—it was installed in 1901, and the tubes have never been turbed yet.

THE CHAIRMAN: What is your boiler pressure, Mr. Gregory?

MR. GREGORY: 175 on No. 2 and 125 on No. 1.

THE CHAIRMAN: Gentlemen, it is about time for us to eat. I guess you are interested in that too, but before we do that I have an announcement to make here.

We have an invitation from the Southern Power Company, through its superintendent of operation, John H. Roddy, for those of you men as are interested to visit their Greenville steam plant and also the Tiger steam plant at Duncan, which is not very far distant.

I would like to say, on behalf of the Master Mechanics Division of the Southern Textile Association, that it is a privilege for us to have come here and met with the local organization of the A. S. M. E. and I am sure that I also am justified in voicing your appreciation for the courtesy of being allowed to sit in joint session with them too. They have made practically all the arrangements for this meeting; they practically relieved Mr. Gregg and myself from any responsibility concerning this thing, and believe me, we appreciate that.

If there is no further business, we will adjourn.

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Sloan Tells of Cotton Uses

(Continued from Page 8)

investigation to date so far as they relate to the uses of cotton bagging. First of all you may be interested to know that the following associations and industries have urged their members to use cotton containers in the shipment of their products:

National Coffee Roasters' Association.

National Fertilizer Association.

National Wholesale Grocers' Association.

American Wholesale Grocers' Association.

Rice Millers' Association.

The salt manufacturers have sent out letters to the trade expressing a willingness to ship in cotton when so requested.

Most of the starch manufacturers have advised their customers that they will ship in cotton if so asked.

The following is the status of cotton containers in the various industries as indicated by our studies which at best must be accepted as preliminary.

Eighty per cent of the cement is shipped in cotton sacks.

In the coffee industry, Meyer Bros Coffee & Spice Company of St. Louis, Mo., have adopted cotton for their 25 and 50-pound sizes for roasted coffee beans with satisfactory results.

Cotton, until recently, has never been considered suitable for the shipment of cotton seed cake and meal. Yet one of the large companies tell us that they began using cotton bags last October with such satisfaction to their customers that their trade has appreciably increased and they now find it advisable to use cotton sacks entirely. They predict that the various other concerns in this business will soon be compelled to ship in cotton.

Flour is one of the great outstanding fields for the use of cotton, it being estimated that 50 per cent of the 700,000,000 cotton bags now used annually in the United States are used for this purpose.

In the shipment of certain vegetables, e. g., potatoes, it has been suggested that cotton bags could be used to advantage on the returnable basis.

Grain is largely shipped in bulk, yet one large company uses from 600,000 to 750,000 cotton sacks, and has the empty bags returned. This has proven so satisfactory and economical that it has had no occasion to buy any new bags in ten years.

One of the bag companies advises that there has been an increase of approximately 3,000,000 yards of cotton bagging cloth over the quantity used in 1925 for the shipment of chick feeds and staple foodstuffs, like bran and alfalfa meal.

With nuts, the practice has been to use burlap or wooden crates and half barrels. One of the largest peanut shippers is now carrying on extensive investigations into the bagging situation.

In the case of salt, it is common practice to use cotton in the packing of evaporated salt; rock salt is largely shipped in bulk.

For seeds, 7,500,000 cotton bags are needed to handle the commercial demand.

In this respect, it is interesting to know that 85 per cent of all seed used in this country either remains on the farm where produced or is sold to neighbors.

Soap is a field in which cotton is coming to the front. In the last year and a half one of the largest companies has shipped over one-third of its product in cotton and states that its advantages are: Ease of handling, saving of floor space, convenience in making up the laundry solutions, and the bags can afterwards be used for collecting the soiled laundry or for returning the wet wash. In one city of Canada (Toronto) 90 per cent of the laundry owners prefer cotton bags. Arbuckle Bros. have advised us that they are now packing all of their 100-pound packages of refined sugar in cotton.

The meat industry uses large quantities of cotton for the protection of its dressed meat.

Several of the large nurseries are now investigating the use of cotton sacking for the packing of their trees and shrubs.

The grocery trade is doing much towards increasing the use of cotton containers in the shipment of coffee, cotton seed meal, flour, grain, nuts, potatoes, rice, salt, seeds, soap, starch, sugar, and various other bulk commodities. If only 10 per cent of these products were carried in cotton, it would mean an increased use amounting to at least 50,000,000 cotton cotton bags a year. But this percentage is not taken advisedly and you will therefore see that our studies have only begun to indicate the possibilities.

We know and you know that there are instances where cotton goods may be substituted for other materials for the best interest of the ultimate consumer and consequently of the trades concerned. We both know equally well that there are other instances in which such substitution is not compatible with the public good.

We have reached the stage where these cases must be explained on a factual basis—not through propaganda or publicity or persuasion, but through development of facts which will be their own salesmen. That is primarily the purpose of the New Uses Section of the Cotton-Textile Institute, although we are looking to organizations such as yours and to the Governmental Departments as well as the trade press of the country for help and for guidance.

Consequently our relationship to you will be that of a distributor of facts. You yourself will decide what to do with those facts. We know that if you are convinced of the economic soundness of any particular extension of cotton goods usage, you will adopt it. We know that you will be equally quick in rejecting an unsound use. Consequently the burden of proof is on us. If we can show you how to save money for yourself and for your customers and at the same time contribute to the prosperity of the Southern cotton farmer, whose interests are of such great concern to you and to us, we know that we shall need no one to plead our cause.

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Export Sales Policies— Their Formulation

(Continued from Page 8)

Bureau of Foreign and Domestic Commerce, from non-competitive firms, banks, etc. In any event, if the manufacturer's line is highly competitive and he desires to sell direct, he must be prepared to grant the same terms as his competitors who may be already firmly established in a given market. For all these reasons the subject of terms should be given the utmost consideration while the export policy is being formulated.

In planning any selling effort abroad some thought must be given to sales helps and advertising matter. These are today an integral part of any sales policy. The manufacturer must determine just how much assistance he will give his customers, whether wholesale or retail, his agent distributors, his local representatives, etc. He should take into account the kind of follow-up work that will be necessary and the expense involved therein. All this is of equal importance even though the selling agency is granted to an export commission house. In the latter case, it is especially desirable that he shall discuss such details with the house or houses to whom he entrusts his representation. This is vital because of the fact that things do not sell themselves. Considerable sales work may be necessary in order to properly launch a line and full consideration should be given in advance to the efforts that will be needed to "put over" a proposition, good though it may be intrinsically. More and more attention is being paid today to the place of advertising in export selling and to the importance of helping the dealer to move goods from his shelves. No wide-awake manufacturer can fail to take this into account.

In connection with sales helps there are various other details which deserve attention while the export policy is being formulated. One is the matter of packages, display stands, etc. Color, design, shape, sizes, etc., are all vital. So, too, is the name of the article. Even more so is the matter of trade-mark, the branding on the package or container, etc. Here again suggestions and advice may be sought from firms already doing an export business. The Bureau of Foreign and Domestic Commerce should also be consulted because, if the information is not already available in its files, the matter can be referred to the commercial attaches, or trade commissioners, who represent it in foreign countries. Even more important than these details is the protection of the trade-mark. Notwithstanding the experience of many American manufacturers who have had their trademarks pirated in foreign markets, the rank and file of our business men still fail to realize how vital it is to select a proper trade-mark with an easily pronounceable name, and then protect it by registration abroad. This should be done before a real selling campaign is undertaken. If not done, the manufacturer may sud-

denly find that, in order to sell his own goods in a certain country, he will have to make terms with some unscrupulous trade-mark thief who is fully protected by the laws of his country. No trade-marked article should ever be pushed unless the trade-mark in connection therewith has been properly registered.

Assuming that careful consideration has been given to the various details of policy, the manufacturer is ready to proceed. It has already been suggested that a policy of trial and error is desirable. An experimental campaign in one or two countries is an excellent means of determining whether the selling plan has been properly worked out, and whether it is sound in all its features. If the manufacturer is properly cautious he will determine in advance the cost of such a test. It is not hard to calculate what the expense will be. He knows how much money he will have to spend for samples, printed matter, letters, postages, etc. It pays to put down all the details in black and white and to check results against expenditure. To blindly plunge ahead merely because of a keen desire to open a foreign market, may not only prove costly, but actually result in great harm. A trial campaign will usually enable the manufacturer to discover weaknesses which can be corrected before serious damage has been done. Having an exact record of the various steps he has taken and all the expenses he has incurred, he is in an excellent position to work with maximum intelligence and efficiency.

In conclusion one additional word of caution need be added. It is this: Don't attempt too much at the beginning. The ordinary evolution in the development of a lasting export business may be roughly defined as the following:

First Year—Experimental.

Second Year—Expansion.

Third Year—Definite results and profitable operations.

Martel Mills Show \$69,730 Loss

The annual report of Martel Mills, Inc., for the year ended January 1, 1927, shows a net loss of \$69,730, after depreciation of \$200,144 and bond interest of \$129,746. For 1925, the company reported a net profit of \$112,731, which replaced a net loss for 1924 of \$184,433.

In his report to the stockholders, G. E. Huggins, president of the company, points out that the earnings for 1926, before interest, depreciation and Federal taxes, amounting to twice the bond interest during the year, of \$129,746. The bond issue of the year by \$500,000 additional series B bonds, having a coupon rate of 6½ per cent, and plant extensions and betterments were undertaken which have increased the total number of spindles operated to 97,020 and the total looms to 2,682.

The regular dividends at the rate of 7 per cent on the preferred stock outstanding were paid during the year, aggregating \$80,500, but no dividends were paid on the common stock.

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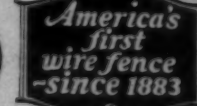
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PAGE

CHAIN LINK FENCE



*Attendance at Master**Mechanics Meeting*

Among those who attended the meeting of the Master Mechanics' Division of the Southern Textile Association were:

Addy, D. E., Gregg Dyeing Co., Graniteville, S. C.
 Black, W. A., Supt., Beaumont Mfg. Co., Spartanburg, S. C.
 Boone, E. E., Master Mechanic, Southern Bleachery, Inc., Taylors, S. C.
 Brown, Geo. E., Jr., International Filter Co., Chicago, Ill.
 Bryant, Chas. K., Michael & Bivens, Inc., Gastonia, N. C.
 Burr, Frank M., Champion Fibre Co., Canton, N. C.
 Chapman, Robert H., J. E. Sirrine & Co., Greenville, S. C.
 Clark, C. E., Chadwick-Hoskins Mill No. 3, Charlotte, N. C.
 Cosgrove, C. H., Salesman, Alemite Lubricator Co., Charlotte, N. C.
 Crow, Fred M., Master Mechanic, Conestee Mills, Greenville, S. C.
 Crute, W. R., Canton, N. C.
 Culbertson, E. R., Sales Engineer, S. K. F. Industries, Charlotte, N. C.
 Danaho, W. J., General Master Mechanic, Carolina Cotton & Woolen Mills, Spray, N. C.
 Fairchild, Henry, Greenville, S. C.
 Floyd, Geo. A., Master Mechanic, Brandon Mill, Greenville, S. C.
 Garrett, T. W., Easley Mill No. 1, Easley, S. C.
 Goode, J. N., Master Mechanic, Cliffside Mills, Cliffside, N. C.
 Goodwin, G. C., Martel Mills, Inc., Lexington, S. C.
 Gregg, J. M., Sec., Southern Textile Association, Charlotte, N. C.
 Gregory, Wm. G., Master Mechanic, F. W. Poe Mfg. Co., Greenville, S. C.
 Hall, L. F., Poinsett Mill, Greenville, S. C.
 Hamilton, J. M., Sr., Graniteville, S. C.
 Harris, J. C., Red River Cotton Mill, Rock Hill, S. C.
 Hayden, M. W., Spray, N. C.
 Hendrix, T. W., Martel Mills, Inc., Lexington, S. C.
 Herren, B. H., Aragon-Baldwin Mill, Whitmire, S. C.
 Hicks, C. C., Master Mechanic, Alexander Mfg. Co., Forest City, N. C.
 Hicks, C. L., Union Buffalo Mills, Union, S. C.
 Iler, H. H., Master Mechanic, Newberry Cotton Mills, Newberry, S. C.
 Jackson, T. S., Sales Engineer, S. K. F. Industries, Charlotte, N. C.
 James, G. L., Stonecutter Mills Co., Spindale, N. C.
 Jones, F. T., Master Mechanic, Victor-Monaghan Co., Greer, S. C.
 McKay, T. E., Master Mechanic, Woodside Cotton Mill, Fountain Inn, S. C.
 Kerr, D. J., Champion Fibre Co., Canton, N. C.
 King, G. T., Supt. of Power, Lancaster Cotton Mills, Lancaster, S. C.
 King, G. T., Jr., Lancaster Cotton Mills, Lancaster, S. C.
 Kirby, H. D., Courtney Mfg. Co., Newry, S. C.
 Kirkpatrick, J. A., Watts Mills, Laurens, S. C.

Knight, Richard, Master Mechanic, Pacific Mills, Lyman, S. C.
 Lake, Marshall E., Power Sales Engineer, Southern Power Co., Charlotte, N. C.
 Lancaster, M. B., Supt., Pacolet Mfg. Co., Pacolet, S. C.
 Land, J. E., Union Buffalo Mill Co., Buffalo, S. C.
 Leonard, D. C., Master Mechanic, American Spinning Co., Greenville, S. C.
 Lindsay, J. O., Pacific Mills, Lyman, S. C.
 McKay, W. H., Master Mechanic, Woodside Cotton Mill, Simpsonville, S. C.
 McKee, W. A., Greenville, S. C.
 McPherson, John A., J. E. Sirrine & Co., Greenville, S. C.
 Marquis, Jesse K., Spartanburg, S. C.
 Mayo, J. B., J. E. Sirrine & Co., Greenville, S. C.
 Melton, G. S., Gaffney Mfg. Co., Gaffney, S. C.
 Misenheimer, L. W., Chadwick-Hoskins Mills Nos. 1 and 2, Charlotte, N. C.
 Mitchell, E. E., Southern Power Co., Greenville, S. C.
 Mize, A. S., Union Bleachery, Greenville, S. C.
 Moore, Geo. B., Arcadia Mills, Arcadia, S. C.
 Moore, C. W., Supt. Power, Pelzer Mfg. Co., Pelzer, S. C.
 Moss, C. T., Master Mechanic, Beaumont Mfg. Co., Spartanburg, S. C.
 Morrison, A. C., Meter Dept., Southern Power Co., Charlotte, N. C.
 Mulkey, T. N., Courtenay Mfg. Co., Newry, S. C.
 O'Brien, Eugene W., Southern Power Journal, Atlanta, Ga.
 Potter, E. M., District Sales Mgr., S. K. F. Industries, Charlotte, N. C.
 Roddey, Jno. H., Southern Power Co., Charlotte, N. C.
 Schumaker, John S., Canton, S. C.
 Shuping, W. L., Westinghouse Elec. and Mfg. Co., Charlotte, N. C.
 Smith, R. G., Master Mechanic, Wymojo Yarn Mills, Rock Hill, S. C.
 Spencer, Chas. A., Union Bleachery, Greenville, S. C.
 Thomas, Mrs. Ethel, Editor, Home Section, Southern Textile Bulletin, Charlotte, N. C.
 Thomason, L. W., N. Y. & N. J. Lubricant Co., Charlotte, N. C.
 Tindell, Fred, Inman Mill, Inman, S. C.
 Tindall, W. P., Poe Piping & Heating Co., Greenville, S. C.
 Waltrop, T. W., Wallace Mfg. Co., Jonesville, S. C.
 West, R. E., Arcadia Mill, Arcadia, S. C.
 Whitehead, O. J., Master Mechanic, Pacolet Mfg. Co., Pacolet, S. C.
 Wrigley, George, J. E. Sirrine & Co., Greenville, S. C.
 Young, W. G., Master Mechanic, Kendall Mills, Inc., Paw Creek, N. C.

Saluda, N. C.—Plans have already been made for the rebuilding of the Saluda Towel Mill, which, as recently reported, was damaged by fire to the extent of between \$35,000 and \$40,000. Actual work will begin at once.

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Wabena Mills, Lexington, N. C., White Hall Yarn Mills, White Hall, Ga.,
Grey Goods, Print Cloths, Twills, Sheetings, Pajama Checks, Arcadia Mills,
Spartanburg, S. C., Clinton Cotton Mills, Clinton, S. C., Hermitage Cotton Mills,
Camden, S. C., Mills Mill, Greenville, S. C., Osage Mfg. Co., Bessemer City, N. C.

Cotton Goods

New York.—The cotton goods markets were not quite so active last week. Sales of gray goods were smaller and there were some reports of prices being easier. Inquiry showed some increase near the week end, due to uneasiness over the cotton situation. Trade in finished goods was fairly large and prices held steady, with sellers showing a tendency to advance prices as the cotton market went higher. Wash goods were quiet, with better business anticipated when the weather is more favorable.

Some of the mills were reluctant to take on long forward business on account of the cotton situation. Sales of printed goods continued large and flannels are well under order. Towels were in fair demand. Bedspreads were less active.

Trade in wide sheetings was slow. Cotton duck showed an irregular tendency, with some extended discounts reported on wide duck. Recent sales have left tire fabrics well sold ahead. New business on fine and fancy cotton goods came in rather slowly, but mills are well under order for some time to come. Gingham were quiet.

Further trading developed in tobacco cloths. The recent business has put some of the Southern centers in a more favorable position, with sales well into the fall. On the 32x28, there has been business at 3½ cents, South, for contracts placed well ahead. Southern 22x18 tobacco cloths have sold into October recently at 2½ cents. The 40x32, 14.75 yard, appear to be in a tighter position. Late contracts, South, have been reported sold recently at 2½ cents; for nearby, it is indicated that some would pay 3 1-16.

The market on 64x60s print cloths was firm at 7 cents for spots and contracts and a few were found in second hands at 6 15-16 cents. There were no more available at 6½ cents. A number of orders were placed at the firmer price. A little interest was remarked on 68x72s on contract with rumors that 7½ cents had been done on late contract first hand. The quoted basis for June was 8½ cents, July 8½ cents and August 8 cents. Spots were found second hand at 8½ cents and first hand at 8½ cents. August 27-inch 64x60s brought 5½ cents and quick 80 squares 10 cents.

Most reports indicated that business in sheetings was of a relatively scattered nature. There was some nearby business in 36-inch, 40x40, 6.15 yard at 5½ cents net, with a number evidently not anxious to sell at three-eighths for later. One-

half was the firm quotation on the 44x40.

On 36-inch, 48x40, 5.50 yard, it was reported becoming more difficult to obtain good makes at 5½ cents net. Most centers were asking seven-eighths and some even money. For 36-inch, 48x48, 5.00 yard, 6½ to 6½ net, the last. For 36-inch, 56x60, 4.00 yard, 8 cents net; 7½ net for 37-inch, 48x48, 4.00 yard; 9½ net for quick 36-inch, 48x48, 3.00 yard, three-eighths to one-half contract. Most centers quoting 8 cents net for 40-inch, 48x44, 3.75 yard.

The combed broadcloth situation is fairly firm and contracts are being placed in several quarters for the 144x76s at 18½ cents. Shirting converters are not the good sales prospects they were because cool weather is keeping men from divesting themselves of their vests and taking to the new style shirting offered in shirtlines.

Quotations on 100x60 carded broadcloths continued at 10½ to 11 cents, depending upon the delivery. Some centers are holding both the late and nearby shipments at even money. Late deliveries of 90x60s in first hands at 10 cents. For quick goods in second hands, one-quarter to three-eighths reported.

There has been so little doing in combed warp sateens that buyers find it easier to get the small quantities they require at lower than recent prices.

Sales through July, August and September constitute the bulk of the 90,000 pieces sold in the Fall River print cloth market. The range of buying has been quite varied, with buyers not particularly anxious for nearby goods, but desirous of placing some business for delivery beginning with the latter part of next month. Mills are inclined to view the situation as an indication that prices of today will reveal good judgment of buyers when compared with prices when deliveries begin.

Cotton goods prices were quoted as follows:

Print cloths, 28-in., 64x64s.	5½
Print cloths, 28-in., 64x60s.	5½
Print cloths, 27-in., 64x60s.	5½
Gray goods, 38½-in., 64x64s.	7½
Gray goods, 39-in., 68x72s.	8½
Gray goods, 39-in., 80x80s.	10
Brown sheetings, 3-yard.	10
Brown sheetings, 4-yd., 56x60.	8½
Brown sheetings, stand.	11
Tickings, 8-oz.	18½a20
Denims.	14½
Staple gingham, 27-in.	9
Kid finished cambrics.	8½a9
Dress gingham.	14½a16½
Standard prints.	8

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The Yarn Market

Philadelphia, Pa.—The yarn market failed to develop any larger buying movement during the week. Reports showed that practically all sales called for small quantities for prompt shipment. A few larger orders were reported but these were exceptions. Yarn consumers continued their efforts to buy cheaper but as a rule, spinners refused to accept business at less than their quoted rates. They held prices on a very firm basis and the whole tone of the price situation was stronger toward the week end as the cotton market showed further advances.

There are varying reports as to the amount of business done in the past several weeks. Some houses report very good sales, especially during the second week in the month, while others state they have had only a small business. The aggregate sales, however, this month have allowed a considerable number of carded yarn mills to sell ahead for the next several weeks. Spinners' prices showed some variation due in many cases to the fact that some of the mills with good orders in hand are asking higher prices than those who will soon need business. Other reports indicate that a considerable amount of yarn has been recently sold through direct-selling mills which would not be accounted for in the Philadelphia market.

Inquiry for carded yarns showed that underwear mills using extra quality yarns were in the market and that the situation in these yarns is strongly in favor of the spinners. Prices were firm with mills well sold ahead. While carded yarns production has continued large during recent weeks there has been no accumulation of yarns in this market.

The combed yarn situation continued strong during the week. Prices made further advances on the strength of higher cotton and the flood news from the Mississippi Valley. Most of the combed yarn mills are well sold for some weeks to come and can offer very little yarn for prompt delivery. Price advances during the week affected single and ply combed yarns and also mercerized yarns. The latter have advanced twice since the first of the month and practically all of the mercerizers are now quoting about the same prices. Single mercerized yarns which have been virtually unchanged since the first of the year are also up in price, current values being reported on the following basis: 60s-1, \$1.08; 70s-1,

\$1.22; 80s-1, \$1.60; 90s-1, \$2 and 100-1, \$2.25. Quotations on two-ply mercerized yarns are as follows: 20s-2, 62 cents; 30s-2, 66 cents; 36s-2, 70 cents; 40s-2, 72 cents; 50s-2, 78 cents; 60s-2, 87 cents; 70s-2s, \$1; 80s-2, \$1.12; 90s-2, \$1.69 and 100s-2, \$2.04.

Southern Two-ply Warps.	
8s	25
10s	25 1/2
12s	26 1/2
16s	28
20s	29
24s	32
26s	33
30s	36
40s	45
40s ex.	49

Southern Two-ply Skeins.	
8s	25
10s	25 1/2
12s	26
14s	27
16s	28
20s	29
24s	31 1/2
26s	33
30s	35
36s	42
40s	44 1/2
40s ex.	49

Southern Single Chain Warps.	
10s	25
12s	26
14s	27
16s	28
20s	29
24s	31 1/2
26s	32
30s	36
40s	46

Southern Single Skeins.	
6s	24 1/2
8s	25
10s	26
12s	27
14s	28
16s	29 1/2
20s	29
22s	31
24s	32
26s	33
30s	35 1/2

Southern Frame Cones.	
8s	24 1/2
10s	25
12s	26
14s	26 1/2
16s	27
18s	27 1/2
20s	28
22s	29
24s	30
26s	31
28s	31
30s	31 1/2
40s	43

Southern Combed Peeler Skeins, Etc.—Two-ply.	
16s	40
20s	41
30s	49
36s	50
40s	53
50s	59
60s	67
70s	79
80s	89

Southern Combed Peeler Cones.	
10s	34 1/2
12s	35
14s	36
16s	37
18s	38
20s	39
22s	40 1/2
24s	42
26s	43
28s	44
30s	46
32s	46
34s	48
36s	49
38s	53
40s	54
50s	61
60s	66

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Want Department

Sale of Kinston Cotton Mills Kinston, N. C.

Under order of court the property of the Kinston Cotton Mills, Kinston, N. C., will be offered for sale at about 12 o'clock M., Monday, May 30, 1927.

The property of this mill consists of real estate in the city of Kinston, in which this mill is situated, together with 61 tenement houses and a superintendent's house all in close proximity to the mill, as well as other desirable, undeveloped, vacant property in the city of Kinston.

This mill is operated by steam and has 16,840 spinning spindles, Howard & Bul'ough make, and is fully equipped to make from 8's to 30's high grade hosiery and underwear yarns on cones, skeins and tubes, single and two ply, production approximately 45,000 pounds weekly, 60 hours.

This property will be offered for sale subject to outstanding mortgage indebtedness of \$230,000.00 (payable over a period of years) to be assumed by the purchaser. Sale will be made subject to confirmation by the court.

Further information will be furnished to anyone interested upon request of the undersigned.

L. J. Mewborne, Receiver.
F. E. Wallace, Attorney.

Position Wanted

Capable male stenographer; textile education. Three years' practical mill experience. One year office experience. Thoroughly understand cloth manufacture. References. E. M., care Southern Textile Bulletin.

Wanted

Overseer for 20,000 spindle spinning room. Want man between age 30 and 40 years who has a good record as well as a good reputation. Good wages and attractive place to live. If you are a "has been," please do not write. I. P., care Southern Textile Bulletin.

Position Wanted

Young married man with executive ability desires textile connection. Five years mill office experience. Now employed but wishes to connect with organization offering opportunity for further advancement. Satisfactory references furnished. Address G. M. V., care Southern Textile Bulletin.

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For Sale—One Saco-Lowell Vertical Opener. Operated less than six months. Lavonia Manufacturing Co., Lavonia, Ga.

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Wanted

Man to take charge of comb and needle plant. None but expert need apply. Address S. M., care Southern Textile Bulletin.

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- 1 Waste Machine Kitson—Two Section Type W 24.

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- 4 40 in. Howard & Bullough Breaker Pickers, 1 beater Auto feed.
- 3 36 in. Potter & Atherton Breaker Pickers, 1 beater.
- 4 40 in. Howard & Bullough Intermediate Pickers
- 4 36 in. Potter & Atherton Intermediate Pickers.
- 4 40 in. Howard & Bullough Finisher Pickers, 1 beater.
- 5 36 in. Potter & Atherton Finisher Pickers.
- 1 Howard & Bullough Automatic feed with 7 openings.

Cards

- 15 Howard & Bullough Revolving Flat Cards 40 in.-12 in. collers 26 in. Doffer.
- 37 Howard & Bullough Revolving Flat Cards 40 in.-12 in. collers 26 in. Doffer.
- 7 Howard & Bullough Revolving Flat Cards 40 in.-12 in. collers 26 in. Doffer.
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- 26 Howard & Bullough Revolving Flat Cards 40 in.-12 in. collers 26 in. Doffer.
- 3 Whitin Revolving Flat Cards 40 in.-12 in. collers 27 in. Doffer.
- 3 Whitin Revolving Flat Cards 40 in.-12 in. collers 27 in. Doffer.
- 49 Saco Pettis Revolving Flat Cards 40 in.-12 in. collers 24 in. Doffer.
- 1 Mason Revolving Flat Card 40 in.-12 in. collers 27 in. Doffer.
- 1 Vacuum Stripping System, (Cook), capacity of 160 Cards, complete with Receivers and Hose.

Drawing

- 27 Heads Howard & Bullough, 4 del. each 8 del. 12 in. bal. 10 in. collers. Electric Stop Motion.
- 49 Heads Howard & Bullough, 6 del. each 30 del. 12 in. bal. 10 in. collers. Electric Stop Motion.

Slubbers

- 13 Howard & Bullough — 72 spindles each 12 x 6 with hank counters.

Intermediates

- 9 Howard & Bullough 10 x 5 — 96 Spindles Each 6 1/2 in. Gauge.
- 26 Howard & Bullough 10 x 5 — 108 Spindles Each 7 in. Gauge.

Fine Speeders

- 8 Howard & Bullough 8 x 4—144 Spindles Each
- 47 Howard & Bullough 7 x 3 1/2—176 Spindles Each
- 6 Howard & Bullough 7 x 3 1/2—168 Spindles Each

Spoolers

- 3 Saco-Loell 108 spindles each, 4 1/4 gauge. Band Driven.
- 3 Draper 100 spindles each, 4 1/4 gauge. Band Driven.
- 1 Easton-Burnham 120 spindles each, 4 1/4 gauge. Band Driven.
- 2 Easton-Burnham 80 spindles each, 4 1/4 gauge. Band Driven.
- 1 Easton-Burnham 60 spindles each, 4 1/4 gauge. Band Driven.

Slashers

- 2 Lowell 2 cylinders, 56x84 front, 56x60 back, 2 copper rolls, 7 beam creel.
- 3 Howard & Bullough 2 cylinders, 56x84 front, 56x60 back, 2 copper rolls, 7 beam creel.
- 5 Sets Iron Hoods, 1 over each 84 in. cylinder, and 1 over each size chest, and 2 B. F. Sturtevant steel fans, Style 60, No. 782.
- 4 Size Kettles 160 gal. each with agitators.

Warpers

- 9 Draper 54 in. wide, drop wire stop motion, adjustable combs, 456 spool creels.
- 12 Hopedale 54 in. wide, drop wire stop motion, adjustable combs, 456 spool creels.

Drawing-in Machines

- 2 Barber-Colman
Style 2 T 5 Bank No. 295.
Style 2 Q 5 Bank No. 30.

Banding Machines

- 2 Cole Bros. 14 ft. long 12 in. wide at carriage base.

Trimmers

- 3 Woonsocket 48 in. with back beam rack and overhead roll cloth.
- 1 Woonsocket 60 in. with back beam rack and overhead roll cloth.
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Folders

- 1 J. D. Elliot 42 in. One Yard Fold adjustable.
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- 1 Dinsmore 48 in. with dial counter attachment (Power).
- 1 Curtis & Marble 48 in. Hand Operated.

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- 1 Bushnell No. 402, 30 in. x 60 in., 72 in. opening. Heavy knuckle joint.
- 1 Lowell Hydraulic with plunger pump.

Nappers

- 1 Grosselin-Fils, 105 in. single acting 14 Rolls—3 3-16 in. dia. with steam cylinder suction vents at base of machine.

Power Equipment Engines

- 1 Greene, cross compound 26 in. x 48 in. x 60 in. stroke, 1500 H. P. 80 1/2 RPM.
- 1 Rice Sargent, cross compound 26 in. x 52 in. x 60 in. stroke, 1500 H. P. 62 1/2 RPM.
- 1 Valley Iron Works, horizontal, single cylinder, 9 in. x 10 in. stroke, 35 H. P. 325 RPM.
- 1 Atlantic Machine Works, single cylinder, vertical 5 in. x 6 in. stroke, 10 H. P. 250 RPM.
- 1 Buckley Jet Condenser 20 feet.
- 1 Buckley Jet Condenser 30 feet.

Boilers

- 5 Aultman-Taylor, water tube, steam drum 42 in. dia. x 23 ft. 6 in., 162 tubes, 4 in. dia. 350 H. P. Horizontal. Hand Fired. Smoke Flue 5 ft. x 8 ft. x 124 ft. sheet metal.

Pumps

- 1 Warren Steam Pump Co., duplex, horizontal, direct acting 10 in. x 10 in. x 12 in.
- 2 I. B. Davis & Son, duplex, vertical, gear driven, 8 in. x 8 in. with counter shaft.
- 1 Warren Steam Pump Co., duplex, horizontal, direct acting 4 1/2 in. x 4 in. x 4 in.
- 1 Deane, horizontal, single, direct acting 12 in. x 14 in. x 8 in.
- 1 Trap, steam, 1 1/2 in. (Crane) tilting.
- 1 Trap, steam, 1 in. (General Fire) tilting.
- 1 Trap, steam, 18 x 24. (Strong, Carlisle & Hammond).
- 1 Trap, steam No. 6 Model D. (V. B. Anderson).
- 2 Feed water heaters, 42 in. dia. x 10 ft., lagged steel shell.
- 1 Feed water heater, 40 in. dia. x 10 ft., lagged, steel shell.
- 1 Cameron Steam Pump Co., single horizontal, direct acting 5 in. x 5 in. x 8 in.
- 1 Damper Regulator. (Locke Regulator Co.)
- 1 Steam Regulator, 18 in. x 32 in., (Warren Steam Pump Co.)
- 1 Steam Indicator (Crosby).
- 1 Pressure Gauge Recorder (Bristol)
- 1 Oil Pump, 1 1/2 in. x 4 in., vertical.
- 1 Oil Feeding System (Sterling Lubricator Co.)
- 1 Receiver, steam, 40 in., x 10 ft., steel shell.
- 1 Receiver, steam, 32 in. x 5 ft., steel shell.
- 2 Inspirators 3 in. Pipe (Hancock).

Generators

- 1 Sprague Electric Co., D.C. type D, 4 1/2 KW, 340 amp., 125 volts, 950 RPM. Belt Driven.
- 1 Commercial Electric Co., D.C., 240 amp., 125 volts, 760 RPM. Belt Driven.
- 1 General Electric Co., D.C. type C.L. class 6-75-550, form B, 660 amp., 125 volts, 550 RPM. With counter shaft. Belt driven.
- 1 Fort Wayne, Motor Generator Set, type MCC, form D, 110 volts, 2.25 amp. 1700 RPM., Generator type MCC, form D, 35 volts, 3 amp. Belt driven, with condenser shaft.

- 1 F. J. Hoxie, Switchboard, late, (3 panels) 8 ft. x 5 ft. with 3 Weston volt meters, 120 volt, 1 Weston ammeter 400 amp., 1 Weston ammeter 300 amp., 1 Weston ammeter 800 amp., 3 rheostats, 3 switches D. P. D. T., 3 switches S. P. D. T.

Drinking Water System

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- 1 Roving bobbin stripping machine, single head.

Bobbin Winder

- 1 Bobbin winder, 9 spindles, 5 in. gauge, 18 Horizontal bobbin spindles.

Bobbin Reamer

- 1 Bobbin Reamer, countershaft attached to wooden stand 24 in. x 18 in. x 30 in. high.

Motors

- 1 Motor, D. C. 10 H. P., 8 amp., 110 volt, 950 RPM. Phoenix Electric Co. Starting Rheostat, type S. A., form P. 1, 10 H. P., 110 volts. General Electric Co.
- 1 Motor, D. C., 10 H. P., 74.5 amp., 115 volts, 650 RPM. Complete with type S. A. form P. 1 Starting Rheostat, General Electric Co.

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- Band Saw 26 in., with 2 ft. x 3 ft. iron table.
- Engine lathe, 16 in. x 6 ft. countershaft and back rest, change gear complete to cut threads from 3 to 25 pitch.
- Chucking lathe, 24 in. x 6 ft., 36 in. between head and tail stock with drill rest.
- Engine lathe, 26 in. x 12 ft., 7 ft. 6 in. between centers with countershaft and back rest, change gears complete to cut threads from 1 to 10 pitch.
- Engine lathe, 14 in. x 8 ft., 5 ft. 6 in. between centers, countershaft and back rest, change gears to cut thread from 4 to 30 pitch. Putnam Machine Co.
- Engine lathe, 20 in. x 11 ft., 6 ft. 6 in. between centers, countershaft and back rest, change gears to cut thread from 2 to 12 pitch. Thomas and Co.
- Speed lathe, 12 in. x 4 ft., 36 in. between centers, countershaft complete. Putnam Machine Co.
- Flat turret lathe, 24 in. x 2 ft. x 9 ft. with cross slide equipped for bar stock. Jones & Lamson Machine Co.
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- Double end emery wheel stand with 2 wheels and countershaft. Wheels, 18 in. diameter, 12 in. face 1 in. hole.
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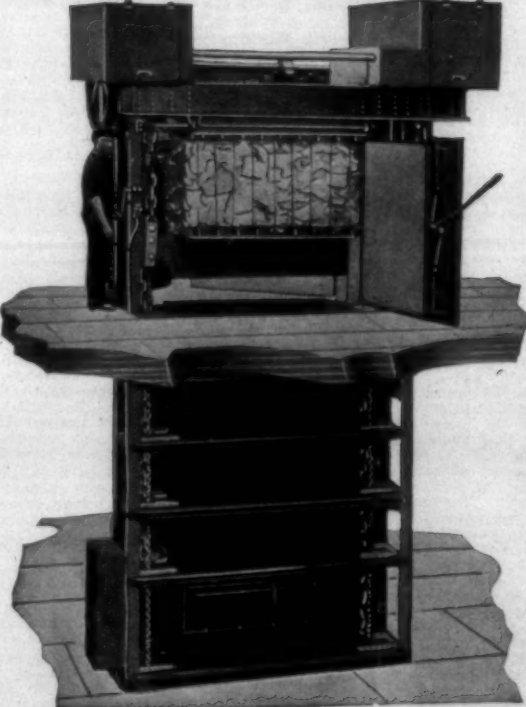
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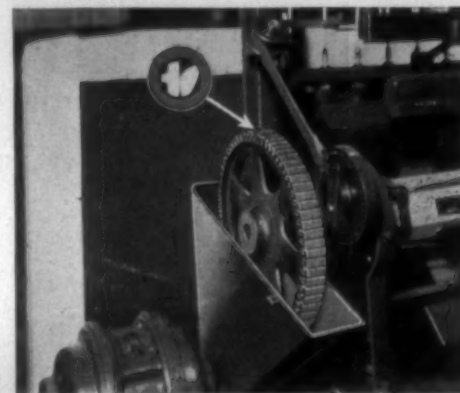
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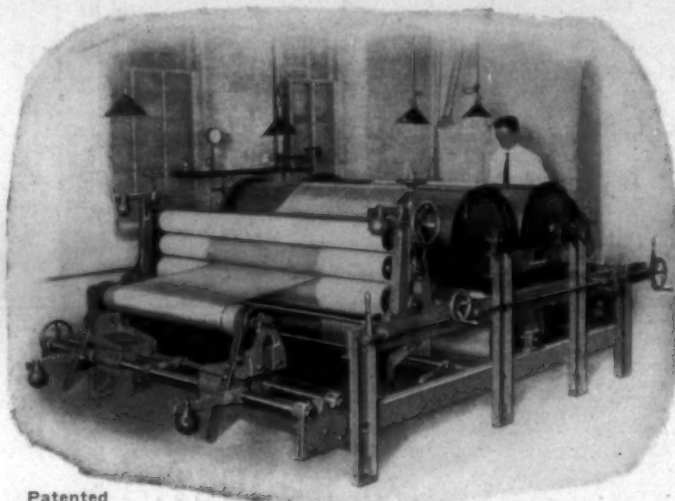
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